

AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT			1. CONTRACT ID CODE		PAGE 1 OF 3 PAGES		
2. AMENDMENT/MODIFICATION NO. AM-0010		3. EFFECTIVE DATE 3/8/02		4. REQUISITION/PURCHASE REQ. NO.		5. PROJECT NO. (If applicable)	
6. ISSUED BY		CODE		7. ADMINISTERED BY (If other than Item 6)		CODE	
8. NAME AND ADDRESS OF CONTRACTOR (No., street, county, State and ZIP Code)				<input checked="" type="checkbox"/> 9A. AMENDMENT OF SOLICITATION NO. DACA83-02-R-0003			
				<input checked="" type="checkbox"/> 9B. DATED (SEE ITEM 11) 12/07/01			
				10A. MODIFICATION OF CONTRACTS/ORDER NO.			
				10B. DATED (SEE ITEM 13)			
CODE		FACILITY CODE					

11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS

☒ The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offers ☒ is extended, ☐ is not extended.

Offers must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended, by one of the following methods:

(a) By completing Items 8 and 15, and returning _____ copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.

12. ACCOUNTING AND APPROPRIATION DATA (If required)

13. THIS ITEM APPLIES ONLY TO MODIFICATIONS OF CONTRACTS/ORDERS, IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.

<input checked="" type="checkbox"/>	A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.
	B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation date, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(b).
	C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:
	D. OTHER (Specify type of modification and authority)

E. IMPORTANT: Contractor ☐ is not, ☐ is required to sign this document and return _____ copies to the issuing office.

14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.)

FY022 MCA PN 50846 COLD STORAGE FACILITY, AND FY01 RDT&E REPAIR WATER TANKS, U.S. ARMY KWAJALEIN ATOLL

(See pages 2 & 3 of 3 pages)

Except as provided herein, all terms and conditions of the document referenced in Item 9A or 10A, as heretofore changed, remains unchanged and in full force and effect.

15A. NAME AND TITLE OF SIGNER (Type or print)		16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print)	
15B. CONTRACTOR/OFFEROR		16B. UNITED STATES OF AMERICA	
_____ (Signature of person authorized to sign)		BY _____ (Signature of Contracting Officer)	
15C. DATE SIGNED		16C. DATE SIGNED	

1. CHANGES TO SPECIFICATIONS: Attached hereto are new and revised pages and sections to the specifications. The revised mark "PC-Am-0002" is shown on each page.

A. REVISED PARAGRAPHS/PAGES. Following are revised paragraphs to the specifications. Changes are indicated in **bold**. The following are new, revised, and deleted paragraphs to the specification.

Section 00250 - Evaluation Factors for Award (changes indicated by
Asterisk)

Section 00900 - Contractor Questions and Answers

DIVISION 01-

SUBMITTAL REGISTER (Cold Storage)
- Page 26 of 32, Section 15653

Section 01900 - MISCELLANEOUS PROVISION
- paragraph 1.11

WATER TANKS

Section 03300 - CAST IN PLACE STRUCTURAL CONCRETE
- paragraph 3.2.1.1

COLD STORAGE

Section 07225 - REFRIGERATED FLOOR INSULATION
- paragraph: 3.2.1 Vapor Barrier

Section 15653 - AIR-CONDITIONING SYSTEM (UNITARY TYPE)
- paragraph: 1.2 Submittals

B. NEW PAGES: The following new pages are added to the solicitation:

Section 00950 - Transcript from Preproposal Conference

2. CHANGES TO DRAWINGS

REVISED DRAWINGS (ISSUED: 03/01/02). The following are revised drawings replace like-number drawings and are issued hereinwith:

<u>RING</u> <u>NO.</u>	<u>DRAWING</u> <u>NO.</u>	<u>SHEET</u> <u>NO.</u>	<u>LETTER</u>	<u>TITLE</u>
2	432-10-01	T-2	d	SCHEDULE OF DRAWINGS
8	432-10-01	C-5	d	UTILITY PLAN
13	432-10-01	C-10	d	PLAN AND PROFILE

14	432-10-01	HR-1	d	BUILDING 610 AND 612. HAZARDOUS MATERIAL FLOOR PLAN
20	432-10-01	A-3	d	REFLECTED CEILING PLAN
31	432-10-01	A-14	d	CEILING & MISCELLANEOUS DETAILS
58	432-10-01	FP-1	d	FIRE PROTECTION NOTES, SYMBOLS AND DETAILS
59	432-10-01	FP-2	d	FIRE SUPPRESSION FLOOR PLAN AND DETAILS
61	432-10-01	M-1	d	MECHANICAL LEGEND AND MECHANICAL FLOOR PLAN
66	432-10-01	M-6	d	DETAIL MECHANICAL ROOM REFRIGERATION PLAN
87	432-10-01	E-5	d	OFFICE MGR LOCKER AND JAN ELECTRICAL PLAN
94	432-10-01	E-12	d	PANEL SCHEDULE

3. The proposal due date of March 22, 2002, 2:00 p.m., Hawaiian Standard Time remains unchanged.

EVALUATION FACTORS FOR AWARD

1. GENERAL:

1.1 Cost of Preparing Proposals: The Government will not reimburse any Offeror its costs incurred in submitting an offer in response to this solicitation.

1.2 Inquiries: Address all inquiries regarding this Request for Proposals to:

U.S. Army Engineer District, Honolulu
Attn: Ms. Renee Hicks (CEPOH-CT-C)
Building S-200
Fort Shafter, Hawaii 96858-5440
Phone No. (808) 438-8567
Fax No. (808) 438-8588
E-Mail: renee.hicks@usace.army.mil

1.3 Proposal submission and sequence of evaluation:

1.3.1 The Government will evaluate offers in accordance with the NON-PRICE EVALUATION FACTORS (the technical proposal) and the offeror's price, as set forth in this Provision.

1.3.2 During proposal evaluation, the NON-PRICE EVALUATION FACTORS will be evaluated to determine acceptability by a Source Evaluation Board (SEB) utilizing the method described below.

* 1.3.2.1 Basis for Selection. The evaluation for this project be based on the Lowest Price Technically Acceptable (LPTA) method. The technical evaluation will be based on an Acceptable/Unacceptable basis. The technical proposal will consist of evaluation factors in which offerors will receive either an acceptable or unacceptable rating. *

1.3.2.1.1 TECHNICAL. The following factors will be used to evaluate each non-price evaluation factor:

1.3.2.1.1.1 Acceptable: Proposal is acceptable; proposal demonstrates acceptable understanding of requirements. Offeror's proposed capability or proposed effort is of an acceptable level of quality and justified or substantiated by meeting the requirements of each factor.

1.3.2.1.1.2 Unacceptable: Proposal is unacceptable; Government's requirements are not met. The Offeror's proposal lacks evidence of capability to perform proposed effort.

1.3.3.1.1 PRICE. The following procedures will be utilized to evaluate the price evaluation factor:

1.3.3.1.1.1 The Offeror's price proposal will not be scored, but will be evaluated separately from the offeror's technical proposal. The Government shall compare the competing prices

proposed by all offerors determined to have submitted acceptable offerors, together with the Government's Estimate, to establish price reasonableness. Cost analysis will not likely be performed under this solicitation, however, the offerors' price breakdown will be evaluated for reasonableness.

1.3.3 The Government intends to award without discussions to the offeror which is determined to be technically acceptable and has the lowest price offer in accordance with the provisions of this solicitation and applicable acquisition regulations. Those offerors who receive an unacceptable rating on any of the technical factors will not be considered for award without discussions. However, if discussions are determined to be necessary, the Contracting Officer will establish a competitive range and conduct discussions with those Offerors within the competitive range. Upon conclusion of discussions, if necessary, the Contracting Officer will request final proposal revisions from the Offerors remaining in the competitive range and may, upon receipt of final proposal revisions, proceed to award a contract without further discussions or notice.

2. PROPOSAL SUBMISSION REQUIREMENTS: Offeror shall provide an INDEX for each of the proposal volumes/sections that shows the title of the subject matter discussed therein and the page number where the information can be found. In particular, Offeror shall specifically refer to the topics and evaluation factors addressed in this section of the instructions. Offeror shall tab and index the proposal to match the listed factors and subfactors. Proposals that are not tabbed and indexed may be considered non-responsive.

2.1 General Requirements for Proposals:

2.1.1 Submission requirements for proposals.

2.1.1.1 Technical Proposals:

Submit one (1) original proposal and four (4) copies, in the format for Technical Proposals as set forth in this Provision.

2.1.1.2 Price Proposals:

2.1.1.2.1 Complete and submit one (1) original and two (2) copies of Section 00010, the Price Proposal Schedule, which is found in this solicitation in sufficient detail to permit Government analysis.

2.1.1.2.2 Submit one (1) original and one (1) copy of the Offeror's Price Breakdown in the format as set forth in Appendix B to Section 00600. Indicate on the Price Breakdown whether or not Facilities Capital Cost of Money is included in the contractor's costs of performing the work. Proposals that state that Facilities Capital Cost of Money is not included in the contractor's costs of performing the work—or proposals that don't state anything at all about Facilities Capital Cost of Money—will be deemed to have waived

Facilities Capital Cost of Money. Additionally, submit one electronic copy of the Price Breakdown, formatted in either Microsoft® Excel97® or Word for Windows97® or an earlier version of the same. Submit the electronic copy on a three and one-half inch (3½") floppy diskette, IBM compatible, labeled with the offeror's name, the solicitation number and title, and the words, "Price Breakdown Electronic Copy."

2.1.1.2.3 Submit with the Price Proposal:

2.1.1.2.3.1 One (1) original and two (2) copies of the Offeror's completed Standard Form (SF) 1442, using a printed copy of the SF 1442 that has been issued under this solicitation;

2.1.1.2.3.2 One (1) copy (certified as a true copy) of the Offeror's executed joint venture agreement (if the Offeror is a joint venture);

2.1.1.2.3.3 One (1) copy of the Offeror's completed Section 00600, Representations and Certifications, using a printed copy of Section 00600 that has been issued under this solicitation; and

2.1.1.2.3.4 One (1) copy of the Offeror's completed (if applicable) SF LLL, Disclosure of Lobbying Activities, using a printed copy of the SF LLL which is found in Appendix A to Section 00600.

2.2 Format Requirements for Proposals:

2.2.1 Any information, presented with a proposal that an Offeror wants to have safeguarded from disclosure to other parties must be identified and labeled in accordance with the requirements of Provision "52.215-1, Instructions to Offerors—Competitive Acquisition (Feb 2000)," subparagraph (e), which is found in Section 00100 of this solicitation. The Government will endeavor to honor the restrictions against release requested by Offerors, to the extent permitted under United States law and regulations.

2.2.2 Prepare proposals in the English language.

2.2.3 Type or print all information presented in the proposal, to the extent possible. Use clear, simple English letters and numbers. Laser printer-quality printing is adequate for the proposals. Elaborate calligraphy is not desired. Do not use size printing or typing less than 10 pitch (United States). Use black characters on white paper as much as possible. Color should be used for clarity, not for purposes of decoration. Do not use colors that do not reproduce legibly using standard office or commercial facsimile or copying machines. Prepare technical proposals on standard (United States), letter-sized (8.5 x 11 inches) or substantially similar international/metric-sized pages. Use only one side of the page. Use non-glossy paper of good weight and quality. Expensive or elaborate paper stock is not desired.

2.2.4 Submit proposal packages to the US Army Corps of Engineers ("the Government") as shown in Block 8 of Standard Form 1442.

2.2.5 Proposals received by the Government after the date and time set for receipt of proposals will be handled in accordance with the requirements of Provision "52.215-1, Instructions to Offerors—Competitive Acquisition (Feb 2000)," subparagraph (c), found in Section 00100.

2.3 Specific Requirements for Technical Proposals:

2.3.1 Submit technical proposals in a narrative format, organized and titled so that each section of the proposal follows the order and format of the factors and subfactors set forth below in paragraph 3. "Technical Evaluation Factors and Submission Requirements."

2.3.2 Information presented in the technical proposal should be sufficiently detailed in order to clearly describe how the offeror addresses the technical proposal evaluation factors. Professional looking and well organized (as opposed to poorly prepared and haphazardly organized) proposals will likely be considered to reflect more favorably on the capabilities of the Offeror; however, it is not the Government's intent to require elaborate "magazine-style" proposals. It is not necessary, nor desired, that Offerors prepare elaborate or lengthy proposals.

2.3.3 There is no limit to the size of technical proposals, or the amount of information that may be submitted to the Government. However, information should be concisely presented, to the extent possible. Information presented should be organized so as to pertain to only the evaluation factor or subfactor in which section the information is presented. Information pertaining to more than one evaluation factor or subfactor should be repeated for each factor or subfactor.

* 2.3.4 The proposal must set forth full, accurate, and complete information as required by this solicitation. The Government will rely on such information in the award of a contract. By submission of an offer, the Offeror agrees that all items in its proposal (key managerial and technical on-site personnel, subcontractors, targets for utilization of eligible SDB concerns, etc.) will be used throughout the duration of the contract and any substitutions of items will require prior approval by the Contracting Officer. *

3. TECHNICAL EVALUATION FACTORS AND SUBMISSION REQUIREMENTS

*"Each technical factor (Past Performance/Experience and Key Personnel) and subfactors will be evaluated on an acceptable/unacceptable basis. Acceptability will be based upon submission of all of the requirements identified in the respective submission section, and the following: For Past Performance- The offeror must refer to at least one past performance evaluation rating of Satisfactory or Better, and the offeror must not have received any Unsatisfactory performance evaluation on any Federal Government contract within the last five years.

For Past Experience - The offeror must refer to at least one contract exceeding \$5,000,000.000 that received a Satisfactory or Better performance rating.

For Key Personal - The offerors' proposal must demonstrate compliance with all of the personnel qualification and organizational structuring referred to throughout the RFP.

An acceptable rating for each factor and subfactor is required for an offerors' proposal to receive further consideration. Failure to receive an acceptable rating for any factor or subfactor will result in rejection of the offerors proposal notwithstanding acceptable ratings for other factors or subfactors. Award will be made to the responsible offeror that submits the lowest priced offer that is technically acceptable to the Government. *

3.1 Evaluation Factor (1) - Past Performance and Experience in an overseas environment similar to U.S. Army Kwajalein Atoll.

3.1.1 Subfactor (1)(a) - Offeror's past performance in completing projects of similar scope, dollar value, and complexity during the past 5 years.

3.1.1.1 (Requirements for Subfactor 1 (a)) The Government will review and evaluate information about each offeror's past performance and will rate offerors as acceptable or unacceptable on the basis of their documented past performance. By "past performance" the Government means an offeror's reputation for satisfying its customers by delivering quality work in a timely manner at a reasonable cost. Past Performance also includes an offer's reputation for integrity, reasonable and cooperative conduct, and commitment to customer satisfaction. In reviewing and evaluating an offeror's past performance, the Government will consider information obtained from the offeror and may consider information from other sources, including past and present customers and their current and former employees. Note that unavailability (due to nonexistence) of past performance records or information cannot result in failure of this element, but will result in a neutral rating. Evidence that an offeror has poor past performance in any area will result in failure of the entire element.

3.1.1.2 Submission Requirements for Evaluation Subfactor (1)(a) - Provide the following for each applicable project (including projects with the Federal, State, and Municipal Governments and private industry):

3.1.1.1.1 Contract Number, Project Description and Location,

3.1.1.1.2 Contracting Officer/Owner's Point of Contact, Telephone Number,

3.1.1.1.3 Original Contract Amount,

3.1.1.1.4 Final Contract Amount,

3.1.1.1.5 Final Completion Date (as established by contract modifications),

3.1.1.1.6 Actual Completion Date (date work accepted by Government or customer),

3.1.1.1.7 Estimated Percentage of Actual Construction Work that the Offeror and its employees performed on the project,

3.1.1.1.8 Interim or Final Performance evaluation (if customer was the Federal Government, submit Standard Form 1420),

3.1.1.1.9. Letters of Appreciation or Commendation and Awards. Letters or other communications generated specifically for purposes of this solicitation may not be given as much weight as evaluations and other communications that are generated in the ordinary course of business.

3.1.1.1.10 Offerors that report an adverse or unfavorable interim or final performance evaluation should attach a narrative that explains, rebuts or describes lessons learned from the adverse or unfavorable evaluation.

3.1.1.1.11 If the Offeror proposes to subcontract part of the work, provide the same information as required above for Offeror's proposed subcontractors. This applies to any subcontractor which the offeror expects to perform more than 20 percent of the work under the contract, in terms of the relationship of the subcontractor's price of doing the work compared to the offeror's overall cost of doing the work. Regardless of the percentage of the work they may undertake, the evaluation factor also applies to any electrical, mechanical, sheet metal roofing, structural steel, or masonry subcontractor.

3.1.1.1.12 For each completed project which the Offeror identifies as an example of past performance, describe that completed project's relevance to the current, proposed project in terms of the Offeror's proposed use of the same key management personnel and subcontractors (including the proposed use of the same key personnel for subcontractors and the use of any same lower tier subcontractors).

3.1.1.2 The information provided by the Offeror will provide the major portion of the information used in the Government's evaluation for past performance. The Government may use other sources to assess past performance information including the Construction Contractor Appraisal Support System (CCASS) and inquiries with previous customers/owners.

3.1.2 Subfactor (1)(b) - Offeror's experience in completing projects of similar scope, dollar value, and complexity in the past 5 years.

3.2.1.1 (Requirements for Subfactor 1 (b)) The Government will review and evaluate the documentation submitted with each proposal with respect to the offeror's past and current work

experience, including technical and geographic similarities between the offeror's past work experience and the work described in this solicitation. Direct experience of the offeror, any joint venture partners or any offerors related by some form of ownership agreement, or experience of any subcontractors that any offeror proposes to utilize in the execution of this work (notwithstanding that the experience of the subcontractor may be more favorably suited to this project than the offeror's) will be considered. A five-year history (during the last five years) of experience performing technically the same or similar work, and a five-year history (during the last five years) of experience of working in the same or similar geographic area will be required. Evidence of experience showing completion of "fast track" - type projects in accordance with U.S. and outside U.S. standards of a like or similar nature will also be required. Offerors will receive an acceptable or unacceptable rating for experience. If the Government concludes, based on evaluation of an Offeror's proposal, that there is significant doubt as to the offeror's ability to successfully perform and complete the required work, the offeror will be found technically unacceptable for this subfactor.

3.1.2.2 Submission Requirements for Evaluation

Subfactor (1)(b) -

3.1.2.1.1 Describe projects of similar scope, dollar value, and complexity, offeror has on-going or completed within the past 5 years.

3.1.2.1.2 State why or how the Offeror's experience with the described projects is relevant to the Offeror's expectation of successful completion of this project.

3.1.2.1.3 If the Offeror proposes to subcontract part of the work, provide the same information as required above for the proposed subcontractors. This applies to any subcontractor which the offeror expects to perform more than 20 percent of the work under the contract, in terms of the relation of the subcontractor's price of doing the work compared to the offeror's overall cost of doing the work. Regardless of the percentage of the work a subcontractor may undertake, the evaluation factor also applies to any electrical, mechanical, sheet metal roofing, structural steel, or masonry subcontractor.

3.2 Evaluation Factor (2) - Personnel experience, qualifications and organization demonstrating experience in successfully executing U.S. Government projects in remote sites, similar to USAKA.

* 3.2.1 Subfactor (2)(a) - Experience and qualifications of the Offeror's proposed key managerial and technical on-site personnel to be used for the project that demonstrate the Offeror's ability to provide quality work within the project completion period, for the price offered. *

3.2.1.1 (Requirements for Subfactor 2 (a)) The Government will review and evaluate the qualifications of each offerors' key personnel as acceptable or unacceptable based on years of

experience, and the degree of management oversight of Government projects of similar scope, dollar value, and complexity that each individual has performed over the past ten years.

3.2.1.2 Submission Requirements for Evaluation
Subfactor (2)(a) -

* 3.2.1.1.1 Identify the key managerial and technical on-site personnel who will be assigned to work under the contract. *

3.2.1.1.2 For each person so identified, provide a resume or other information that describes his or her qualifications for the job(s) that the person will be performing, including any special skills or experiences deemed worthy of note.

3.2.1.1.3 Describe each person's experience in overseeing application of U.S. Government construction procedures, including Contractor Quality Control (CQC) procedures, if applicable to the position the person is to hold within Offeror's organization.

* 3.2.1.1.4 For all named, proposed subcontractors in Offeror's proposal, provide the same information as required in the preceding paragraphs for the subcontractors' proposed key managerial and technical on-site personnel. This applies to any subcontractor which the offeror expects to perform more than 20 percent of the work under the contract, in terms of the relation of the subcontractor's price of doing the work compared to the offeror's overall cost of doing the work. Regardless of the percentage of the work a subcontractor may undertake, the evaluation factor also applies to any electrical, mechanical, sheet metal roofing, structural steel, or masonry subcontractor. *

* 3.2.2 Subfactor (2)(b) - The Offeror's proposed on-site organization structure to be used under the contract that demonstrates the Offeror's ability to provide quality work within the contract completion period, for the price offered. *

3.2.2.1 (Requirements for Subfactor 2 (b)) The Government will review and evaluate the organization charts and other pertinent information as stated in the submission requirements for this subfactor as either acceptable or unacceptable. Offerors will demonstrate their ability to complete the required work successfully through the use of an efficient organizational structure that allows for streamlined reporting processes, proper subcontractor management, ability to manage resources, and technical knowledge and capability of the staff.

3.2.2.2 Submission Requirements for Evaluation
Subfactor (2)(b) -

* 3.2.2.1.1 Describe the Offeror's proposed job site organization. *

3.2.2.1.2 Describe how the Offeror intends to monitor and control timeliness, quality and safety of the work at the job site, including the work of the subcontractors.

* 3.2.2.1.3 Incorporate into the description an organizational chart for on-site managerial and technical staff, tying in the identities of the key managerial and technical personnel that are described in Subfactor (2)(a). *

* 3.2.2.1.4. For all named, proposed subcontractors in Offeror's proposal, provide the same information as required in the preceding paragraphs for the subcontractors' proposed on-site organization structure. This applies to any subcontractor which the offeror expects to perform more than 20 percent of the work under the contract, in terms of the relation of the subcontractor's price of doing the work compared to the offeror's overall cost of doing the work. Regardless of the percentage of the work a subcontractor may undertake, the evaluation factor also applies to any electrical, mechanical, sheet metal roofing, structural steel, or masonry subcontractor. *

RESPONSES TO QUESTIONS
SUBMITTED BY VARIOUS PLANHOLDERS
FOR
RFP DACA83-02-R-0003

NOTES:

A. QUESTIONS ARE NOT LISTED IN ANY SPECIFIC ORDER. THE PLANHOLDERS WHO SUBMITTED THE QUESTIONS ARE INDICATED.

B. QUESTIONS RECEIVED MAY OR MAY NOT RECEIVE RESPONSES PRIOR TO THE PROPOSAL DUE DATE. THEREFORE, OFFERORS SHOULD DEVELOP THEIR PROPOSALS AS THEY INTERPRET THE SITUATION DESCRIBED IN THE DOCUMENTS AVAILABLE.

J.A. JONES CONSTRUCTION QUESTIONS:

1. Drawing S-4, Tank Structural Notes under item C., note # 5 states that the Contractor shall include costs for monitoring cultural resources. Please clarify this statement regarding the inclusion of cost and advise if any particular requirements are different under this contract from the previous customary practices in Kwajalein.

RESPONSE: This drawing note has been deleted by amendment. Refer to contract specifications regarding cultural resources.

2. Note # 6 under the same drawing noted in 1. above states Contractor is to include costs for asbestos coated underground pipe. Can the Government provide an approximate quantity of hazardous pipe expected underground?

RESPONSE: This drawing note has been revised by amendment. No asbestos-containing materials are anticipated for the underground pipe.

3. Drawing S-1 indicates that only 6 panels can be removed from the existing tank covers for access to execute construction work. If the Contractor can obtain approval from TEMCOR, would it be acceptable to remove more than 6 panels for improved access purposes?

RESPONSE: Yes, more panels can be removed, if approved by tank dome cover manufacturer, TEMCOR.

4. Drawing S-4, item H for tank testing requires the following. Fill the tank to complete capacity and monitor water level drop until ½ inch develops or three days elapse, whichever occurs first. This note and related testing criteria further states that adjustments will be made for evaporation and temperature during testing. What will the evaporation and temperature formula basis be to measure against the tank water loss? The climate varies little in Kwajalein. What is the allowable evaporation loss if calculated today?

RESPONSE: Refer to ACI 350 I.R (to be added as a reference by amendment).

5. Drawing S-7 (As Built) and Plans Sections. Details and Notes contain the following information, which is confusing and conflicting with the other documents. This drawing shows a "SCHEDULE OF WORK" and TYP PLAN FOR TANKS. In this table, 15 tanks

are listed with conflicting information. For example, it states that all tanks are to get a new FML floor system. We believe this drawing has many other notes and requirements which do not apply. Please advise what portions of Drawing S-7 and other "As Built" Drawings are applicable for this RFP.

RESPONSE: *Sheets S-5 through S-9 are reference asbuilt drawings, and are provided in the contract for general reference (informational) purposes only. These are provided to assist the contractor with planning demolition and new work. New contract actual physical work requirements are not shown on the reference asbuilt drawings but are indicated on Sheets S-1 through S-4.*

6. Drawing S4, note F -3 states that the Contractor will assume 150 gallons of epoxy for 500 lf of shrinkage cracks per tank for 500 lf of cracks. A similar note exists under item 4. for the floor slab, i.e., 500 gallons of epoxy for 3480 lf of shrinkage cracks. Will the contract be modified if the quantities vary? If so, what will be the basis of measurement and payment?

RESPONSE: *These notes regarding quantities of epoxy will be deleted by amendment. Contract requires extraordinary procedures to eliminate concrete shrinkage cracks. Any shrinkage cracks that develop after the new concrete floor slab has been cured will be considered the responsibility of the contractor to repair by epoxy injection. The contractor will be required to determine the amount of epoxy required to repair shrinkage cracks. Existing walls are not expected to have shrinkage cracks that cause water leaks.*

7. Section 03300, 1.7.3 mentions that Air Entrainment shall be required. Section 03300, 2.3.1 mentions that Air-Entrainment Admixture shall not be used. Section 03300, 3.14.4 and 3.14.5 mention the use of Air-Entrainment agents or admixture. Please indicate which spec is the required.

RESPONSE: *The following paragraph is being added to Section 03300: "1.8.3 Air Entrainment. All normal weight concrete shall be air entrained to contain between 4 and 7 percent total air, except that when the nominal maximum size coarse aggregate is 3/4 inch or smaller it shall be between 3.5 and 5.5 percent. Concrete with specified strength over 5000 psi may have 1.0 percent less air than specified above. Specified air content for normal weight concrete shall be determined in accordance with ASTM C 231." Also, the following will replace the text in Contract Specification 3300, paragraph 2.3.1, Air Entrainment Admixture: "ASTM C 260 and shall consistently entrain the air content in the specified ranges under field conditions."*

8. It is our understanding that there are no items required for handover as Government salvage at the existing Cold Storage Warehouse. Is our understanding correct?

RESPONSE: *No, amendment AM-0009 contains the salvage requirements .*

9. Detail 1 of Drawing A-9 indicates a double layer of 6 mil Polyethylene sheets with tapped or folded staggered joints under the 89 mm thick cement grout layer with the radiant tubing of the Freezer Slab system. On the other hand, the typical slab details shown on Drawing S-2 do not show these sheets. Only a 15 mil Polyolefin Geomembrane is shown as a vapor barrier for the Office, Mechanical and Electrical Rooms. Spec

Section 07225 – REFRIGERATED FLOOR INSULATION, Paragraph 3.2.1 indicates to provide Vapor Barrier (Black polyvinyl chloride, 0.75 mm thick) and Slip Sheet beneath the entire concrete floor slab and floor insulation as indicated. Please clarify if the Polyethylene sheets are to be installed according to Drawing A-9 or beneath the insulation as indicated in Section 07225. Please send a detail for a better understanding.

RESPONSE: *For Office, Mechanical & Electrical Rooms: Follow note “15 mil polyolefin geomembrane” on structural sheet S-2 for vapor barrier requirements. For vapor barrier & slip sheet requirements for freezer, chill, ice storage, receiving/issue, freezer staging rooms, see Amendment #6.*

10. Section 03300, 1.6.2.1 - Strength Requirements - indicates a compressive strength of 27.5 Mpa for the Concrete Topping over Refrigeration and Freezer Floors. Section 03300, 1.7.3 – Mix Design for Topping for Refrigeration and Freezer Floors asks for a 28-day strength of at least 34.5 Mpa. Please define which strength is correct.

RESPONSE: *Refrigerator and Freezer floors shall have a minimum compressive strength of 34.5 Mpa. Section 03300, 1.6.4, regarding slump increase, please refer to slump table in specs which allow the maximum slumps as shown.*

11. Section 02754, 2.2.1. Can Round Concrete Aggregate be used in the pavement construction?

RESPONSE: *Round concrete aggregate should not be used for the pavement. The use of round aggregates will decrease the strength and bonding of the concrete pavement. The overall integrity of the pavement section may be difficult to control.*

12. On sheet M-18 the schedule of unit coolers served by rack "A" is a total 92 tons of refrigeration and for rack "B" a total 50 tons. Then on sheet M-19 the schedule of compressor racks calls out rack A at 50 ton and rack B at 92 ton. Please clarify which is correct and verify the compressor sizing called out in the rack schedule.

RESPONSE: *The Mechanical Equipment Schedule and Electrical drawings were revised to resolve this.*

DICK-PACIFIC CONSTRUCTION QUESTIONS:

13. Please clarify if subcontracting plan require to submit as part of bid submittal, if yes, please provide us the requirements and standard forms.

RESPONSE: *No, the small business requirements (i.e., subcontracting plans) does not apply to this project.*

14. Please clarify if the general contractor require to provide full time QC manager and Safety officer for the duration of the project, if yes, what are the qualification.

RESPONSE: *CQC requirements have been added by amendment. Safety Officer must have at least 5 years of safety experience and be first-aid and CPR certified.*

15. On page 00800-24, K-21: Will the government to handle the UXO ordinance survey and clearance prior to contractor site clearing and grading?

RESPONSE: *Yes.*

16. On page 00700-64, 52.236 Permits Responsibility: Please clarify if general contractor require to secure building permit and pay all fees to government of Marshall Island?

RESPONSE: *Only the Marshallese income tax is required.*

17. Please extend the deadline of submission of question for another 4-weeks.

RESPONSE: *As stated at the pre-proposal conference, questions will continue to be accepted; however, there is no assurance that responses will be provided in sufficient time to allow appropriate adjustment of proposals.*

18. Existing buildings to be demolished: Is there a landfill area that we can use to dump materials or do all materials have to be removed from island.

RESPONSE: *The existing landfill will be available for appropriate materials.*

19. Asbestos: Can you please tell us what type and thickness of existing materials. Do these materials have to be removed from Island or again is there a landfill area that we can use.

RESPONSE: *See hazardous materials survey report. The asbestos must be removed from the island.*

20. Please provide specifications for the new FML waterproofing system

RESPONSE: *New FML waterproofing system is not required for the project. Detail 3/S-1/S-1 requires existing FML liner tank liner to be removed. Reference asbuilt drawing sheet S-6 shows the existing asbuilt condition of the FML tank liner.*

21. Will submitted bids for the water tanks be awarded at the same time with the cold storage facility or at a different date?

RESPONSE: *It is currently intended to award both projects at the same time, if funds are available.*

22. Please provide drawings for the three existing buildings to be demolished. (Floor plans, elevations, cross sections, and general mechanical, electrical layout plans)

RESPONSE: *Drawings and notes will be provided by amendment.*

23. Price breakdowns – Parts 1, 2, & 3, Parts 2 & 3 are the same and have no reference to solicitation numbers. Is Part 2 for the cold storage facility and Part 3 for the water tanks?

RESPONSE: *The format for the submission of Cost Breakdown was revised and issued with Amendment 0005.*

24. Drawing S-1 dome cover notes No. 3. Removal and replacement of dome tank cover by TEMCOR or by others: Please clarify who is responsible to the removal & replacement COST to be rendered by Temcor, the government or general contractor.

RESPONSE: *Note 3 reads in part as follows: "Removal and replacement of the tank cover panels for construction purposes shall be performed by the original tank cover*

manufacturer or if by others, shall be in accordance with and approved by the original tank cover manufacturer (TEMCOR)." The general contractor is responsible for cost to remove tank dome cover for construction purposes. The general contractor may perform this work himself, subcontract this work to TEMCOR or another subcontractor of his choice, however, removal of the tank dome cover must be performed in accordance with the original tank dome cover manufacturer procedures.

25. Please confirm if water tanks # 966, 946 and 947 are the only three (3) tanks to be repaired under this contract.

RESPONSE: *Concur, only tanks 966, 946 and 947 are to be repaired under this contract.*

26. Drawing S-7 As-built Drawing, Schedule of works: Again, please re-clarify only tank #966, 946 & 947 are the tanks to be repaired, the other twelve (12) tanks that listed on the schedule are NOT part of the scope of work.

RESPONSE: *To re-clarify, only tanks 966, 946 and 947 are to be repaired under this contract. There seems to be some confusion of what is required by drawing sheet S-7. Please note that drawing sheets S-5 through S-9 are reference asbuilt drawings and only show existing asbuilt conditions. The reference asbuilt drawings are provided in the contract for general reference (informational) purposes only and are provided to assist the contractor with planning demolition and new work. New contract actual physical work requirements are not shown on the reference asbuilt drawings S-5 through S-9. Actual new work for tanks are indicated on Sheets S-1 through S-4.*

27. Drawing detail 2/S-1, what is the size/area of roof dome opening for construction access. Is the area of opening accessible to bring-in backhoe w/ breaker?

RESPONSE: *Actual construction access dimensions should be coordinated with the original tank dome cover manufacturer, TEMCOR representative, (Mike Weitzenhoff, M & M tank, 808 845 7556).*

28. Please clarify if the water tank need to install new FML liner system after removal of existing, if yes please provide materials specification.

RESPONSE: *New FML waterproofing system is not required for the project. Detail 3/S-1/S-1 requires existing FML liner tank liner to be removed. Reference asbuilt drawing sheet S-6 shows the existing asbuilt condition of the FML tank liner.*

29. Please clarify all information shown in "AS BUILT/ FOR REFERENCE ONLY" are not part of the scope of work under this contract.

RESPONSE: *Drawing sheets S-5 through S-9 are reference asbuilt drawings and only show existing asbuilt conditions. The reference asbuilt drawings are provided in the contract for general reference (informational) purposes only and are provided to assist the contractor with planning demolition and new work. New contract actual physical work requirements are not shown on the reference asbuilt drawings S-5 through S-9. Actual new work for tanks are indicated on Sheets S-1 through S-4.*

30. Drawing S-4, Note "I" Water Tank Disinfections: Please clarify where to dispose or drain approximately 18,000 Gallons of water during disinfection.

RESPONSE: *An amendment will be made to require disinfection by spraying with 500 ppm chlorine solution. After tank is sprayed with the disinfection solution, the tank would be filled with water to dilute the solution to 10 ppm concentration and then the solution would be used for potable water.*

31. Drawing S-1, Plastic Liner Removal Notes, Item 2. The liner shall be removed by method approved by the government to minimize damage to existing liners: Please provide information what is the acceptable removal method of the government.

RESPONSE: *Tank liner is loosely laid on tank floor, draped on the tank walls and held in place with embedded wall anchor bolts. Refer to reference asbuilt drawings sheet S-6. Method to remove tank liner work should be provided to the contracting officer representative for approval once project has been awarded.*

32. On drawing sheet C-3 Legend, indicated the 508mm and 205mm new un-reinforce concrete pavement, however on drawing sheet C-8 detail 20 & 21 indicated with reinforced concrete pavement. Please clarify which to follow.

RESPONSE: *Reinforced detail to be used for odd-shaped slabs ($L > 1.25W$) and mismatched joints.*

BLACK CONSTRUCTION QUESTIONS:

33. Light Fixture Type 'D' - Luminaire Details on Dwg. E-18 shows a surface mounted fixture (WideLite - FreezerLyte Model), which requires wiring and raceway below the insulated ceiling panel while mounting Det 5/E-3/E-10 shows pendant mounted (Widelite WarehouseLyte Model) with wiring and raceways above the insulated panels. Please clarify correct fixture model or mounting scheme.

RESPONSE: *The Type D Fixtures are installed inside of the refrigerated compartments, and must be supported independent of the freezer panels. The wiring between light fixtures should be run outside of the refrigerated box, and should not be attached to the freezer panels. Widelite WL Series (FreezerLyte) is correctly specified for light located inside refrigerated compartment. WideLite's "WarehouseLyte" series is not suitable for this application, and should not be used.*

34. Refrigerated Container Receptacles - Det 4/E-1/E-10 shows T&B MIPCO #333FC. Current T&B Catalogs show this item as obsolete. Suggested replacement is AMERACE #333FCV. Please check if acceptable. Also, Electrical Symbols on Dwg. E-7 and Diagram on Dwg. E-7 call for 60-Ampere while the above-specified model is a 32-Ampere Receptacle. Please Clarify.

RESPONSE: *Verified the part number with Matson in Honolulu. Verified with Wesco Hawaii (808 839-7261), that the part was listed in the current Mipco product catalog. The item is difficult to find, so the contractor should contact equipment*

supplier like Wesco to locate the item. Substitutions should be requested following the award.

35. Transient Suppression Protection Unit - No specifications. Please provide.

RESPONSE: An addition to the specifications for the Transient Voltage Surge Suppression (TVSS) Unit has been added by amendment.

36. Disconnect, Switches - No specifications. Please provide.

RESPONSE: An addition to the specifications for disconnect switches has been added by amendment.

37. Is there any existing concrete batch plant facility in the island that a contractor can use? What is the production capacity.

RESPONSE: The existing concrete batch plant will not be available.

38. Is there any US Army owned heavy equipment available for contractor use? (I.e. crane, trucks/trailer, forklifts, backhoes, pumps, etc). Please provide list including rental rates if available.

RESPONSE: The on-island Army-owned equipment will not be available.

39. Can contractor buy gas/fuel for their equipment from U5 Army? Please provide cost of gas/fuel per gallon?

RESPONSE: Gas and diesel fuel will be available for purchase by the contractor. The 2002 rate for gas is \$1.07 per gallon, and the price of diesel is \$0.96 per gallon. There is also \$0.16 per gallon handling fee.

CLOSE CONSTRUCTION QUESTIONS:

40. Environmental Report: Please advise how we can obtain a copy of the hazmat survey prepared by Brewer Environmental. This report is referenced in SPEC Sections 13281 (Asbestos), 13282 (Lead Containing Paint), and 13286 (PCB). Please refer to SPEC Section 13281, par 1.3, page 6 and 13286, para 1.2(a), page 3 for specific reference to this report by BES.

RESPONSE: The survey report has been included in Amendment 0004.

NELSON REFRIGERATION QUESTIONS:

41. We are in receipt of Amend #4 on the above referenced project. We would like to clarify the requirements. The specification calls for all metals to be stainless steel if constructed in "exterior and non air conditioned space". Are the Cold-Storage Rooms (Prefabricated Panel Type) classified to be in a "non air conditioned space" requiring the metal clad skin to be stainless steel? Technically, the exterior side of the panels will not be in an air conditioned space.

RESPONSE: Please refer to Section 13038, para. 2.1 "The cold storage room shall conform to NSF 7 and to MIL-R-43900..." MIL-R-43900 refers to aluminum cladding.

42. Reference Specs: 15652 - 2.11 Ice Maker and Plans: Sht M-19 Ice Maker Schedule. The plans and specs call for (2) new ice makers. Although required capacities and accessories are provided a specific manufacturer "or equal" was not provided. Is there anyway the government can provide us with the manufacturer that the plans & specs where pattern on?

RESPONSE: *The specs were designed around Mannhardt and Vogt.*

PACIFIC INTERNATIONAL INC.

43. Section K- 10, (a), notes: "However, the contractor is advised that there may be limited numbers of skilled Marshallese available for hire for this Contract." We agree that this is the case for Marshallese who are residents of Ebeye in the Kwajalein Atoll. Our workforce includes skilled Marshallese who are not residents of Ebeye, and if we were to utilize them for this Contract, they would have to be housed. In reference to Section K-10, (d), please advise if Marshallese will be granted the necessary permission from the Commander USAKA to reside in Contractors camp on Kwajalein Island.

RESPONSE: *The housing of Marshallese workers on USAKA controlled islands, in this case Kwajalein Island, is not allowed in accordance with USAKA Regulation 190-10. An exception to policy would need to be submitted through the Corps of Engineers, Kwajalein Resident Office to USAKA Public Works. This request must be staffed through the Provost Marshal and Security offices to the Commander, USAKA, for approval. Each exception request is evaluated on a case-by-case basis and approved or disapproved. In the event that the contractor is asking for a group of Marshallese to live in his mancamp facilities, the exception can be processed for the group of Marshallese citizens/workers. Each individual does not have to be a separate request for exception.*

J.A. JONES CONSTRUCTION QUESTIONS:

44. Cold Storage Facilities:

a. Referring to the Concrete topping slab for the refrigerated and Freezer rooms, Section 03300, 1.7.3 at the end of the paragraph says that "in no case shall the slump exceed 25 mm as determined by ASTM C 143". For workability purposes, could the slump be increased to 75 mm as required for other slabs in section 03300, 1.6.4 – Slump.

RESPONSE: *Per Section 03300, 1.7.3, slump for refrigerator and freezer slabs shall have a maximum slump of 25mm.*

b. What is the interior finish of the insulated panels of the refrigerated and freezer rooms? The drawings show them as metal clad insulated panels. Please indicate the desired finish.

RESPONSE: *Per MIL-R-43900B, interior finish of the insulated panels shall be patterned aluminum, 0.040 inch thick, per manufacturer's standard finish.*

c. Please Define Hardware Set # 2. Refrigerated Room Manufacturers are requesting this information.

RESPONSE: *Per MIL-R-43900B, door hardware shall be of stainless steel. Standard cold storage door hinges shall be furnished on all refrigerated or freezer doors and shall be self-closing type with stainless steel pins and nylon cam type bearings. For sliding doors, ball bearing trolley rollers shall be provided on the overhead track. Hardware, overhead track and floor guides shall be stainless steel. The door latch and striker shall be of the adjustable type and shall be provisions for a padlock. The latch shall have provisions for being opened from the inside, when locked from outside, without damage to the door latch assembly. Safety release is required for both swing and slide type doors.*

45. Water Tanks: Will the government provide at no cost all the water required for testing the tanks and for the construction as well?

RESPONSE: *An amendment will state that utilities metering for the Repair Water Tanks project is not required. Water for the testing of the tanks will not be charged to the contractor.*

46. Cold Storage Ice makers:

a. Type = cubes, crushed, or tube?

RESPONSE: *Tube Ice.*

b. Is the bagger to be part of the storage bin or a separate piece of equipment?

RESPONSE: *Bagger is attached to the ice storage bin.*

c. Capacity of bagger?

RESPONSE: *Bagger should be setup to fill 20 lb bags of ice, but should be capable of filling 10 to 50 lb bags.*

d. Are there any physical size requirements/restrictions for this equipment?

RESPONSE: *Ice making capacities and storage are included in the Mechanical Equipment Schedules on the drawings. Equipment furnished must fit in the allotted space.*

e. Any more information available i.e. similar make & model?

RESPONSE: *Equipment used for the design was Vogt and Mannhardt.*

47. Cold Storage rooms:

a. Finish/color (insulated panels)?

RESPONSE: *See Specs. Reference to MIL-R-43900B. Patterned .04 inch thick aluminum.*

b. Hardware requirements for all doors?

RESPONSE: *For non-clad storage room doors see spec section 8700 paragraph 3.2 hardware sets. For cold storage room doors see attachment (from Specs-Intact) MIL-R-43900B.*

c. Please verify the details and requirements for door D-17 (that type of door is not available as fire rated)?

RESPONSE: *Details and requirements per attached MIL-R-43900B. Fire rated cold storage room doors are available. See attached catalog as example.*

DICK-PACIFIC CONSTRUCTION QUESTION:

48. The Loads given on S-1 Design Criteria D. Design load a. Roof Dead Load of 1.6kpa (32psf) does this include the mechanical load given on S-9 Detail 2 max. Total Service Weight 8.8kn (2,000 lbs)?. If to use the max. weight at all locations this would add 3.05kpa (61.5psf) over and above the given Roof Dead Load.

RESPONSE: *The Roof Dead Load on Sheet S-1 includes the roof dead loads except the double tee self weight and topping weight. The intent of the maximum concentrated load given on Sheet S-9, Detail 2, is to provide a maximum limit on the amount of concentrated load at a typical anchor.*

NELSON REFRIGERATION QUESTION:

49. Reference Shts M-18 & M-19. On Sht M18, the capacity requirement for all the unit coolers calculate out to be 1,104,171 btu (medium temp racks) and 605,202 btu (low temp racks). On Sht M19, the compressor rack schedule show the medium temp racks @ 176 kw or 600,688 btu and the low temp rack has a requirement of 324 kw or 1,105,812 btu. The loads been switched from page M18 to page M19. Which one is correct?

RESPONSE: *The equipment schedule on sheet M-19 was revised and will be provided in an amendment, following the proposal due date, to reflect capacities comparable with sheet M-18.*

BLACK CONSTRUCTION QUESTIONS:

50. Must materials be made to the exact metric dimensions given or can material be supplied in closest U. S. inches/feet?

RESPONSE: *Where particular building materials in hard metric units are not manufactured, same materials of inch-pound measurements may be converted to soft metrics.*

51. Who is responsible for the installation? That is, is the bidder supplying the material with others being responsible for its installation?

RESPONSE: *Contractor is ultimately responsible for the installation of pallet storage racks. The Contractor may use bidder supplying the materials*

or others.

52. Re: 1.3.1 - The 1997 RMI spec is the latest with some manufacturers producing rack to the previous 1964 spec. Which spec are you requiring?

RESPONSE: RMI Specification should be the latest date of publication, 1997.

53. Re: 1.3.1.2 - Is material to conform to Seismic Zone 1 standards? 3.4, 3.4.1 and 3.4.2 indicate requirements far beyond Seismic Zone 1.

RESPONSE: Minimum seismic Zone 1 standards; entire structure was designed on Seismic Zone 1.

54. Re: 1.3.2 - Says flue spacing is to be 300 mm but drawing A15 shows 305mm.

RESPONSE: Flue spacing 300 mm, plus or minus 5 mm, unless indicated otherwise.

55. Re: 2.1.1a - It is not clear whether requirements is for structural steel frames and beams, roll-formed frames and beams, or some combination of both.

RESPONSE: Some combination of both with yield strength of not less than 310 MPa.

56. Re: 2.1.1b - Does this mean the aisle-side post is to be fitted with an additional thickness of steel for impact resistance?

RESPONSE: Yes, to resist forklift impact resistance.

57. Re: 2.1.1e - Says frame height is to be 5842 mm (19') but drawing A15 shows some frames to be 5487 mm (18') and some 4876 mm (16'). Also, says frame depth is to be 1016 mm but drawing A15 shows 1067 mm (42'). Which size(s) are required and quantity of each.

RESPONSE: Use dimensions shown on the drawings. Revised specifications will be provide to planholders in a future amendment.

58. Re: 2.1.2b - Says beams are 1422 m (56") and 2743 mm (108") but drawing A15 shows beams re 7' 6". Which size(s) are required and quantity of each.

RESPONSE: Use beam length shown on the drawings. Revised specifications will be provided to planholders in a future amendment.

59. Re: 2.2.1 and 2.2.2 - One of these says finish is to be galvanized and the other says finish is paint. Which one?

RESPONSE: All ferrous metal shall be thoroughly cleaned and hot dipped galvanized after fabrication. After galvanizing all ferrous metal surfaces shall be factory finished.

60. Re: 2.2.3 - Who is responsible for applying these safety stripes? Is the bidder to ship materials with stripes factory applied or is this work to be done by installers or others?

RESPONSE: Contractor is responsible for safety stripes.

61. Re: 3.2 - Talks about sway braces. It is unclear how these re to be used or where they are to be installed. The frames are manufactured with bracing welded in. This spec calls for bolts. Are you requiring bolt-together frames? Or is this spec calling for a lateral back brace?

RESPONSE: Sway braces to resist horizontal forces to prevent racks from toppling due to domino effects. Racks may be welded or bolted.

CLOSE CONSTRUCTION QUESTIONS:

62. Reference spec 02120 para 3.2, Transportation and disposal of hazardous materials. Our interpretation is that disposal can be any approved site. Asbestos to PVT at Nanakuli, Oahu, and Lead & PCB to a U.S. mainland site. However on a recent project on Roi-Namur reference was made to a current USAKA spec that allowed disposal only on mainland. Please advise which is correct.

RESPONSE: Any site outside of Kwajalein, conforming to that specification, is acceptable, including approved site(s) in Hawaii.

63. Comparison of Brewer's Environmental report and drawing C-2 indicates an error in "dimension table" on HR-1. We know that Bldg 612 is approximately 4,500 SF, but table on HR-1 indicates #612 is 1,259 sq meters or approximately $1259 \times 10.76 = 13,547$ SF or 3 times actual.

RESPONSE: Conflicting information is presented between the Dimension Note Table listed on HR-1 and in the report. Upon review of the data, adjustments will be made to the Table and will be reflected in the revised drawing submitted in a future amendment. The planholder should be note that the HR drawings are provided for reference only and the planholder is responsible for verifying all material quantities and locations.

DICK-PACIFIC CONSTRUCTION QUESTION:

64. Each water tank has 1 million gallons capacity and require to have leakage test after repair, will the government provide a free of charge of water during testing?

RESPONSE: A future amendment will state that utilities metering for the Repair Water Tanks project is not required. Water for the testing of the tanks will not be charged to the contractor.

SAN JUAN CONSTRUCTION QUESTIONS:

Sheets C-5 & C-10

65. Drawings C-5 and C-10 describe the underground piping to the FDC/Fire Department connection. This information is also shown on FP-1. However, this information is in conflict.

a. C-5 shows a 6" underground to the FDC, and FP-1 shows a 4". Which is correct?

RESPONSE: *The 6 inch line shown on C-5 and C-10 will be reduced to a 4 inch line.*

b. C-5 shows a 6" check valve at the FDC, and FP-1 shows a 4" check valve at the riser. Which is correct?

RESPONSE: *The 6 inch check valve at the FDC will be removed on sheets C-5 and C-10.*

c. If the FP-1 location for the check valve is correct, then a low point drain and ball drip is needed on the underground. No detail is shown.

RESPONSE: *The 4 inch check valve should be located at the riser. A low point drain and automatic drip are not required in the area not subject to freezing.*

Sheet FP-1

66. Drawing FP-1 riser detail shows a "Test Header" off of the riser. Is this correct? (Test headers are usually only required for fire pump installations, and not where flow tests can be performed using fire hydrants.)

RESPONSE: *The test header is required for the full flow test of the backflow preventer.*

Sheet FP-2

67. FP-2 the drawing notes state: "Provide sprinkler protection...in this boundary area." The loop on the tag line indicates the wall line. Another note near column lines 1/G indicates the dashed line that would include the overhangs. Which is correct?

RESPONSE: *Provide sprinkler protection within the boundary area as shown on the drawing A/FP-2, which should be including the overhang area of the west and north sides of the building.*

68. FP-2 detail "B/FP-2" indicates an insulated dry pendent sprinkler and branch line. Specification Section 15080 does not indicate which type of insulation and thickness are to be used for fire sprinkler piping. Which section shall we reference for this insulation?

RESPONSE: *Provide 38 mm thick cellular glass insulation per Specification 15080, para 2.2.1 for above ground cold pipeline.*

69. FP-2 detail "B/FP-2" indicates insulation up the entire length of the dry pendent, and includes the branch line piping. The mechanical drawings show SF-1 as ventilating the box with outside air. If the ambient air surrounding the freezer and cooler boxes is above 40 degrees F (5 degrees C), why is the fire protection piping insulated? If the ambient air surrounding the freezer and cooler boxes is below 40 degrees F (5 degrees C), where is the supplemental heat to keep the wet system from freezing? Insulation will only slow down how long it takes to freeze, not prevent it from freezing. With or without a heat source in the plenum space above the freezers and coolers, the insulation will only hasten the freezing of the sprinkler system by keeping the ambient heat away from the piping.

RESPONSE: *The reason to insulating the fire sprinkler piping above the freezer and chiller area is to prevent condensation but not to prevent it from freezing. Per Supplemental heat is not required to keep the wet system from freezing. Per*

the manufacture recommendation, the 12 inches minimum distance from face of tee to the top of the freezer will prevent possible freezing problems due to conduction, when the temperature surrounding the wet pipe sprinkler system is maintained at a minimum temperature of 40 degree F, and the lower temperature within the protected area is -20 degree.

70. FP-2 detail "B/FP-2" will cause the branch lines to freeze. The -15 degree F (-26.1 degree C) will travel up the dry pendent tube wall, the insulation will prevent any ambient heat from warming the tube wall, and the cold will freeze the fitting the dry pendent is attached to. Even in areas with an ambient of 80 degrees F outside the freezer box, we see ice forming as high as 12" above the top of the box on the dry pendent sprinklers that are penetrating the freezer ceiling. With a required K factor of 110 for the dry pendent sprinklers, this limits the maximum length to 17" or less. With the box lid 5" thick that only leaves a maximum of 12" above the box (detail B/FP-2 shows 12" minimum above box). The cold will migrate up the outer tube of the dry pendent and freeze the fitting it is attached to. We typically attach radiation fins to the outer tube of dry pendants for freezers to collect heat from the surrounding air to prevent the formation of ice on the tube and to protect the fitting the dry pendent is attached to. (The fins are of aluminum, sometimes round or square, and resemble the fins on fin tube baseboard heat). Please provide direction to avoid damage to the fire sprinkler system caused by freezing.

RESPONSE: Provide 38 mm thick cellular glass insulation around the dry pendant sprinkler nipple above the freezer up to 305 mm, and tightly caulk around the aluminum pipe sleeve and the end of the insulation at the sprinkler nipple. Revised drawing detail will be provided in an amendment.

71. Due to the lack of sufficient water pressure available, would a fire pump option be considered? The main grid and branch line sizes could be reduced and the heat spacing increased if a fire pump were utilized.

RESPONSE: Due to the high maintenance cost and unreliable problems, a fire pump is not accepted for this project.

72. The rack storage is over 12' high and no hose reel connections are shown as required by NFPA 13, 7-4.1.6.

RESPONSE: Fire hose connection is not required for this project.

73. What is the size of the expansion tank on M-7 and M-15?

RESPONSE: Provide a 20 gallon expansion tank for the hydronic warming system.

74. Reflected Ceiling Plan Sheet A-3, shows acoustical tile at the vestibule. Ceiling and Misc. Details Sheet A-14, Detail 2, shows two layers of 16 gypsum board at vestibule. Please verify.

RESPONSE: Ceiling at Vestibule Room 27 is acoustical tile as shown on reflected ceiling plan, Sheet A-3.

75. Foundation Plan Sheet S-5, Line H, shows footing type WR-1. The section symbols on Line H, 1-S5-S3 refer to a type WR-3 footing. Please verify.

RESPONSE: The section cut shown through the WF-1 footing along line H is a similar section to 1-S5-S3, and is noted on plan as “SIM”.

76. Foundation Plan Sheet S-5, Line 2, shows footing type WR-2. The section symbols at Line 2, 4-S5-S3 refer to a type WF-3. Please verify.

RESPONSE: The section cut shown through the WF-2 footing along line 2 is a similar section to 1-S5-S3, and is noted on plan as “SIM”.

77. Please clarify Amendment 0002 revised drawings Water Tanks Sheet C-1, A-2, M-1, E-1, E-2, E-3, E-4, and E-5.

RESPONSE: That list shown on page 3 of 4 on the Standard Form 30 was an error and does not apply to either project. Please disregard it.

1 RFP DACA83-02-R-0003
2 FY02 MCA PN50846, COLD STORAGE FACILITY,
3 AND
4 FY02 RDT&E REPAIR WATER TANKS,
5 KWAJALEIN ISLAND

6
7
8 PREPROPOSAL CONFERENCE
9 9 JANUARY 2002

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18 PREPROPOSAL CONFERENCE

19 Taken on behalf of the Army Corps of Engineers, at United
20 States Army Kwajalein Atoll, Building 365, Community
Activities Center, Room 6, Kwajalein Atoll, Micronesia,
commencing at 8:40 a.m., on Wednesday, January 9, 2002.

21

BEFORE:

22

Valerie Mariano, RPR, CSR
Certified Shorthand Reporter
Hawaii CSR #353
California CSR #9765

23

24

25

APPEARANCES
(In alphabetical order)

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David Y. Kam, USACE HED, Honolulu, Hawaii
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Richard Say, USACE HED, Honolulu, Hawaii

ATTENDEES:

Mike Bradley, San Juan Construction
Larry Cotton, San Juan Construction
Sam Garcia, Nelson Refrigeration
Frank Hawk, San Juan Construction
David Kramer, Pacific International, Inc.
Shuichi Kurosawa, Nippon Hodo Co., Ltd.
Thomas Maddison, MIT-JENMEI J.V.
Troy McAllister, San Juan Construction
Brian Midyett, Kiewit Pacific Co.
Roy Paris, Unitek Insulation, Inc.
Frank Schumann, Unitek Technical Services
Brent Smith, J.A. Jones
Robert Toelkes, International Bridge Corp.
Sammy Woodall, Dick Pacific

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1 P R O C E E D I N G S

2 MR. LEONG: Good morning. My name is Rodney Leong.

3 And welcome to the presolicitation conference for
4 RFP DACA83-02-R-0003 for constructing a cold storage
5 facility and repairing three water tanks at Kwajalein.

6 Start off by introducing everyone. Again, my name is
7 Rodney Leong. I'm the project manager for these projects.
8 At the front table we have Jesse Duarte from our Resident
9 Office; Gene Dohrman from USAKA; Dave Kam, he's our chief
10 of contracting; Lew Askew is our resident engineer;
11 Richard Say is our -- he's from our counsel, Office of
12 Counsel; and Russ Camaucho from Raytheon finance. We have
13 a couple other people coming a little later. I'm sorry.
14 Sergeant Jones from the security office, he's office
15 security. Major Coffey will be showing up a little later.
16 Tom Dillon also will be showing up a little later.

17 Valerie Mariano is our court reporter. She'll be
18 taking notes and will be providing a transcript of the
19 proceedings. So I would ask that you all speak clearly.
20 Identify yourself and speak clearly for her benefit. The
21 transcript will be provided by amendment in a couple weeks.

22 Okay. Let's go around the room and introduce
23 yourselves.

24 MR. WOODALL: I'm Sammy Woodall, Dick Pacific
25 Construction.

1 MR. BRADLEY: Mike Bradley with San Juan Construction.

2 MR. HAWK: Frank Hawk with San Juan Construction.

3 MR. McALLISTER: Troy McAllister with San Juan
4 Construction.

5 MR. COTTON: Larry Cotton, San Juan Construction.

6 MR. GARCIA: Sam Garcia, Nelson Refrigeration.

7 MR. SMITH: Brent Smith. I'm not with San Juan
8 Construction. I'm J.A. Jones Construction.

9 MR. MIDYETT: Brian Midyett. I'm with Kiewit Pacific
10 Company.

11 MR KRAMER: David Kramer, Pacific International, Inc.

12 MR. SCHUMANN: Frank Schumann, Unitek Technical.

13 MR. PARIS: Roy Paris, Unitek Insulation.

14 MR. MADDISON: Thomas Maddison, JENMEI.

15 ROBERT TOELKES: Robert Toelkes, International Bridge.

16 MR. KUROSAWA: Shuichi Kurosawa, Nippon Hodo Company
17 from Japan.

18 MR. LEONG: Again, welcome. The purpose of this
19 preproposal conference is to help you as offerors become
20 familiar with doing business in Kwajalein, as well as
21 construction, and become familiar with the general project
22 and contract requirements. This is not intended to go into
23 the nitty-gritty of the design. If you do have issues with
24 the design, please submit your questions or comments in
25 writing. We have a sign-up sheet going around, and on it

1 is my phone number, my fax number, e-mail. So provide any
2 questions and comments by those various methods.

3 As I mentioned, this solicitation is for two projects,
4 the construction of the new cold storage facility. It's
5 about 22,000 square feet. The documents set forth the
6 requirements for constructing that project. The other
7 project is the repair of three existing water tanks,
8 building -- I mean, tank number 946, 947, and 966,
9 basically replacing the bottoms, concrete bottoms of those
10 tanks, as well as some piping.

11 In front of you is a proposed agenda. After my
12 general remarks, we'll go into some presentations by
13 Raytheon personnel. They'll give you an idea of how
14 business is -- is conducted out here for construction
15 contractors. They'll give you some general information
16 about living out here as well as doing business.

17 After the USAKA folks have their chance to pass on
18 their information, we have -- we will have Lew Askew
19 provide a construction overview doing work in Kwajalein.
20 And that will be followed by David Kam, who will be
21 providing some general contracting requirements. And he'll
22 be followed by Richard Say, who will talk a little bit
23 about the evaluation and selection procedures.

24 And that will be followed by a questions-and-answer
25 period. As indicated on your copies of the agenda at the

1 bottom, we do ask that you submit your questions in
2 writing. They can be handwritten, but try to make it clear
3 so we can read it.

4 We will be accepting additional questions following
5 this, but to ensure that we are able to have enough time to
6 respond to your questions, we ask that you submit those
7 questions as soon as possible. We expect to submit -- or
8 issue an amendment which will include this transcript of
9 this conference, as well as responses to your questions, in
10 a couple weeks. It will be issued by amendment.

11 We'll continue receiving any questions, but at some
12 point within the next week or so -- anything beyond that
13 point, there's no guarantee we'll be able to respond to
14 your questions prior to the proposal due date of 1 March.
15 So we do encourage you to get your questions in as soon as
16 possible.

17 That's basically all the general things I have at this
18 point. Any questions before we move on?

19 Okay. If not, Gene Dohrman will provide a USAKA
20 overview.

21 MR. DOHRMAN: Okay. My name is Gene Dohrman. I'm the
22 director of Public Works here at USAKA. I'm not going to
23 get at the podium. I kind of like it informal, so I'm
24 going to stay down here.

25 You've got several things we handed out. Just kind of

1 go through those before I start through this summary
2 command brief. You've got this handout which, as I said,
3 is some select pages out of our command brief that we give
4 to people that come out, whether they're VIPs or whomever,
5 congressional folks. We'll go through that.

6 The second thing you have is -- is a -- essentially a
7 map of Kwajalein Island, multi-page, which is -- if you
8 look at our phone book, you'll notice that it -- this map
9 is in there, I think, in the back. And the front sheet is
10 a locator guide, kind of tells you some of the specific
11 types of facilities you might be looking for. This is just
12 general information, but it's -- it's a very detailed map
13 of Kwajalein Island in reality, which is where all the work
14 is under this contract or RFP.

15 You also have a CD. I think I owe one person a copy.
16 That CD has the current edition of the USAKA Environmental
17 Standards which are in essence the environmental law that
18 we have to follow. You know, we don't have state or -- or
19 essentially RMI regulations to follow. Basically we follow
20 the UES because it's -- it was generated as a part of a
21 government-to-government negotiation and agreement.

22 I'm not going to get into the details of the UES, but
23 you need to be aware of it. There's such things as the
24 environmental protection plan and the things that are
25 developed as part of the contract or part of the spec

1 requirements. It's a cited document, and I -- you need to
2 understand that it is the key document when you talk
3 environmental issues or environmental requirements at
4 USAKA.

5 The last, I think, two-page listing you have is -- is
6 basically for information only. It's a representative list
7 of the types of construction equipment that our base
8 operations contractor has here at USAKA. It indicates some
9 rental rates. One thing you need to understand is
10 basically you need to bring all the equipment to do the
11 job. In some situations where we can help, and with
12 certain advance notice and on a space available or
13 noninterference and a fully reimbursable basis, we do from
14 time to time provide under this reimbursable agreement
15 equipment to the contractors. Bottom line is, you can't
16 depend on it. Don't -- there's no guarantees it's
17 available at any point in time, so you need to be
18 self-sufficient in equipment and basically everything.
19 Bottom line is, our intent is to provide you real estate
20 for your offices, workshops, warehouses, whatever it is;
21 and beyond that, you should bring everything with you.

22 With that, we'll go back to this brief that's got
23 USAKA on the front. And as I said, these are just some
24 select pages out of the command brief, and I'm not going to
25 go through -- there's a lot of details in here. I'm not

1 going to go through every bullet or anything like that.
2 You can read it. A lot of you have been here before.
3 For -- for those that haven't, I might -- I'll just
4 highlight a few things.

5 I was a little late. I apologize for that, but I was
6 called down to this gentleman's on the bottom of the first
7 page office about 8:15 for a ten-minute meeting, and that's
8 why I ended up being a few minutes late. Colonel Wrenn is
9 the commanding officer here.

10 If you go to the second page, I think everybody knows,
11 if you've traveled out here, we're a long way from anything
12 and -- you know, we're in the middle of nowhere. And
13 that -- that presents some unique challenges.

14 Third page is more than you probably need or want to
15 know. But basically that's the USAKA organizational chart.
16 Commander's at the top. You know, the rest basically is
17 staff. Some of it to the right there is in Huntsville, but
18 the majority of the staff is out here.

19 As far as support, the USAKA staff, we basically have
20 four major contracts. We have a base operations contract.
21 We have a technical contract that runs the range, now the
22 Reagan Test Site. We have technical support to the range
23 contract, which is MIT Lincoln Labs. And then the last
24 somewhat minor contract is the Aeromet con -- the weather
25 contract. Currently Aeromet is the contractor. The

1 current contractor for the base operations contract as well
2 as the range technical contract is Raytheon.

3 Next sheet talks about goals. I'm not going to get
4 into any of the details. Basically that's just showing how
5 we tie into our higher headquarter's goals, which is the
6 Space and Missile Defense Command in Huntsville, Alabama.
7 Essentially these projects tie to our goal number 4 about
8 improving living and working conditions. These facilities
9 are, I guess I could say, infrastructure support to the
10 people here.

11 Next page gives you an idea of the size
12 personnel-wise. On island resident population is about
13 2300. It fluctuates from month to month, but plus or minus
14 2300. And you'll note that approximately 1400 Marshallese
15 workers from Ebeye are coming here on a daily basis to
16 support USAKA.

17 Next sheet, what's unique about USAKA is -- unless
18 you've been at other military installations in the world,
19 you'll -- as I have been and the military folks, you can't
20 appreciate how unique this place really is as far as a
21 military installation. It's unlike -- in almost every
22 respect, it's unlike any military installation in the world
23 just because it's so far from anything. There's nothing
24 outside the gate. The gate is water, basically. We are
25 totally self-sufficient in every respect. We run an

1 international airport, an international harbor. You know,
2 all these things, as well as all the normal police,
3 security, hospital, schools are not -- we're -- the schools
4 and retail services are all provided under the contract.
5 They're not DoD schools, and they're not AAFES and all the
6 things that are normal. Doesn't happen here. We do have a
7 post office here and those types of things.

8 Continuing on the next page, as I said, there's
9 nothing outside the gate, so our housing for us is
10 basically Hawaii. It's the close -- when we go outside the
11 gate or tell somebody we need -- we're going to go shopping
12 at the mall, you know, that's a five-hour flight from here.
13 We don't have any personal or privately owned vehicles, no
14 POVs. As I said, we're -- we don't have a commissary, PX.
15 We're not on the Army Family Housing Inventory. We don't
16 have a school run -- or a hospital run by MEDCOM. We don't
17 have a school run by DoD. We don't have all these things.

18 But I guess the thing I would highlight on that sheet
19 is we work within -- and for those of you who have been
20 here before and worked here, we work within one of the
21 world's most corrosive environments. And that's -- that
22 drives everything here. So-called rust resistant or
23 galvanized or whatever is gone here in a very short period
24 of time. So you'll see a lot of things within the design
25 that are unique because of lessons learned over the decades

1 of what works and what doesn't work out here.

2 Next sheet -- just next couple of sheets, in fact,
3 just kind of give you some of the locations and the types
4 of facilities, in the retail area, in the food services
5 area, and then lastly, recreation. That's one of the great
6 things about out here is the recreation and the
7 water-related sports and the things you can do here,
8 assuming you had that time off to do it. But it's a great
9 place for recreation. It's got some of the greatest diving
10 in the world. If you're a diver, you'll -- you need to
11 take advantage of that.

12 That's basically all I intended to say. If there's
13 any questions, I'll entertain those.

14 If not, Rodney?

15 Sergeant Jones, you want to go ahead?

16 Oh. Major Coffey got here. Okay.

17 Major Coffey, you want to go ahead?

18 Major Coffey is the chief of our Host Nation office.
19 He's going to just give you an overview of our relationship
20 to the RMI. And in this location -- and with respect to
21 this contract, it's really Ebeye because that's the closest
22 population that supports -- primarily supports Kwajalein
23 Island where both projects are.

24 MAJ COFFEY: Do they already have this or --

25 MR. DOHRMAN: No.

1 MAJ COFFEY: Well, I don't have enough for this many
2 people.

3 MR. DOHRMAN: Well, in some cases there's two or
4 three --

5 MAJ COFFEY: Let's get at least one per table.

6 MR. DOHRMAN: Yeah. Just be sure you get one per
7 company. I think there should be 13 or 14 if those are the
8 ones I left for you.

9 MAJ COFFEY: Okay.

10 MR. COTTON: You want to give this to somebody else?
11 You said you were one short?

12 MR. DOHRMAN: Yeah. Who didn't --

13 MR. DUARTE: I'll take that.

14 MR. DOHRMAN: Yeah.

15 MAJ COFFEY: I'm not sure exactly what your questions
16 will be, exactly what you're looking for from me, but if we
17 can just go through these slides one page at a time, and if
18 at the end if you have any questions, I'll do my best to
19 address them.

20 The relationship that USAKA and the government has
21 with the Marshall Islands is governed by a treaty that in
22 this particular case is called the Compact of Free
23 Association. This first page here tells you some of the
24 things that we're obligated to under that contract and
25 under other legal agreements that we have signed with the

1 Marshall Islands.

2 The second bullet on that first page, the income to
3 the RMI -- the second bullet is the income to the RMI. The
4 14 million is land payments that we make directly to the
5 government of the RMI for use of the islands that we have
6 telemetry and other facilities located on. The 2.5 million
7 per year is the income tax that comes directly from the
8 contract employees that work here on Kwajalein or work for
9 USAKA.

10 Any questions on the first page?

11 Flip to the second page.

12 I don't know what kind of experience we have here, but
13 if you're not familiar with this atoll, the second page
14 will kind of get you up to speed really quick. The
15 Mid Atoll Corridor is basically uninhabited. We have a few
16 facilities out there, telemetry, optics, things like that.
17 But for the most part, it's considered a safety zone. And
18 we don't per se lease that area, but we don't encourage and
19 we discourage when there's an actual test going on anybody
20 being in that region of the atoll.

21 If you'll look at the bottom of the page, you'll see
22 Kwajalein. The next island to the north along the east
23 reef is Ebeye, the next large island. That's where the
24 work force, the Marshallese work force, lives for the most
25 part. We have about 800 people that come over here every

1 day using the ferry system to work and then return home
2 every night.

3 Roi-Namur, the northernmost island in the atoll, is
4 the other major work center for USAKA. We have a few
5 people that live up there and then another hundred or so
6 that commute up there every day. Of course, that number
7 varies greatly with whether or not there's a mission going
8 on. And we maintain our own air fleet just to service
9 community and to go that island and to some of the other
10 facilities in the atoll.

11 Any questions on the second slide?

12 Real quick, on the third slide, the RMI demographics,
13 it's self-explanatory; but if you're really interested in
14 that slide, it's -- there's a lot of controversy over what
15 the actual population on Ebeye is. I guess it's hard to
16 get a good count because there's so much -- they're so
17 mobile. You know, at any one time a good bit of the
18 population will be in Majuro or even the United States and
19 traveling throughout the other islands in the atoll. I've
20 heard estimates as high as 15,000 over there now. Bottom
21 line, it's one of the most densely populated pieces of
22 property in the world. I've been told it's even more dense
23 than New York City, you know, per square mile or Tokyo.
24 And that definitely has an impact on the quality of life
25 over there.

1 Any questions on the demographics?

2 Next page, the only thing I'd like to highlight with
3 this page, infrastructure problems, these are all problems,
4 but if your information is not up to date, you might think
5 that it's worse over there than it really is. In each of
6 these areas we've seen significant improvement over the
7 past year. I personally attribute a lot of that to the
8 current administration here, President Note and his
9 administration. He's the first commoner to have be elected
10 president in this country. And since he's been there, a
11 lot of the projects that were started years and years ago
12 but never seemed to ever get completed are being completed.

13 They have now had consistent power over there for --
14 since, I guess, March of last year. The sewage facility
15 which had been inoperable for a couple of years is now up
16 and running. They now produce, using reverse osmosis
17 system, enough fresh water for what they need minimally to
18 get buy. During year -- calendar year 2002, they should
19 triple their water production and add to their power
20 generating capacity to -- so -- they can meet their current
21 needs, but we're opening a new hospital there that will be
22 dedicated this month, and that will have significant power
23 drain. And we're trying to encourage them to open a
24 Laundromat, which will also have significant power drain.
25 So they're increasing their power-generating capacity for

1 future -- to meet those needs and future growth.

2 That hospital is one of those projects I was talking
3 about. It was actually started seven years ago in 1994,
4 and the money just seemed to keep disappearing and, you
5 know, different bureaucratic problems. But anyway, they've
6 got a new crew in there working on it. The money's been
7 consistent, and the thing is beautiful. It will really
8 have an impact on the quality of life in the islands.
9 USAKA's even considering starting to refer people over
10 there. And we're all looking forward to dedicating that at
11 the end of this month. It will be a significant event in
12 the life of the people in this atoll.

13 Any questions about the conditions on Ebeye? If
14 anything of you haven't had a chance to get over there and
15 would like to get over there, please contact my office, and
16 we can arrange a tour.

17 While we're talking about Ebeye, something I was asked
18 to mention, please don't consider Ebeye as possible
19 residence for any contract workers that you might bring out
20 here. They're overcrowded right now. They've got a lot of
21 problems. There's -- there's issues going on right now
22 about the number of people that USAKA seems to encourage to
23 come -- emigrate to Ebeye. It's causing a lot of political
24 problems. All that aside, when you come to do work here,
25 it's work for USAKA, and you need -- you need to figure the

1 housing out. I don't know if that was covered before I got
2 here, but I was asked to emphasize that point.

3 Do you have any questions about that? Am I on track?

4 MR. DOHRMAN: No, I think the solicitation gets into
5 the housing under the special clauses, those types of
6 things.

7 Were you going to get into that, Lew?

8 MR. ASKEW: Yes.

9 MAJ COFFEY: Okay. Great.

10 Benefits of the Compact to the US are on the next
11 slide. This is basically -- the first bullet is what my
12 job's all about. We do have treaties, you know, that say
13 we can use these facilities. We pay a certain amount. But
14 in the past when relations between USAKA and the
15 Marshallese government has deteriorated, we actually have
16 had sail-ins that shut down the range for a certain amount
17 of time. So I take my job seriously, and I think my whole
18 staff does.

19 And we ask everybody that comes here and works here to
20 realize that the mission is important. And anything that
21 could affect relations between us and the Marshall Islands'
22 government or just the people in this atoll could have
23 significant effect on our operations here and possibly any
24 work that you're doing here.

25 Even things like we've got -- we had -- for lack of a

1 better term, I'll call her a queen. We had a queen that
2 just recently passed away, and it shut down, you know, a
3 lot of the things that are going on around here. You know,
4 maybe not a huge impact, not the impact of, say, the
5 president passing away or one of the kings, but it pulled
6 kids out of school. A lot of workers didn't come to work.
7 Just -- it's a different culture. You got to take things
8 like that into account. They're very family oriented. And
9 it's not uncommon for somebody to miss work a couple of
10 weeks because a close relative died, so -- if that helps
11 you in your planning any.

12 It's been estimated that the US has over the years
13 invested four billion dollars in this facility. I've asked
14 questions about that number, and basically what they're
15 saying is it would cost four billion dollars to relocate
16 all the resources that we have here to another location.
17 So that's how they come up with that number.

18 And obviously, you know, we have a source of fairly
19 inexpensive labor. The range of skill varies greatly
20 depending on what kind of education they had and what kind
21 of prior work experience, of course.

22 The next slide, the benefits to the RMI, these are
23 some of the things -- it expounds on the first slide. It
24 goes into more detail. These are some of the things that
25 aren't tracked as closely as the major payments that we

1 make, just to give you an idea of what impact the presence
2 of USAKA and the work that we do here has on the local
3 economy and the quality of life.

4 Any questions on this last slide or any of the things
5 that I've covered so far?

6 Again, if anybody would like more information about
7 the Marshall Islands or the job that my department does or
8 is interested in a tour of Ebeye, please contact the
9 Host Nation Office while you're here.

10 Is that good?

11 MR. DOHRMAN: That's good. Thanks, Major Coffey.

12 MR. KRAMER: Excuse me. Can I get that copy of that?

13 MAJ COFFEY: Sure.

14 SFC JONES: Are you done?

15 Good morning. My name is Sergeant Jones. I am the
16 provost sergeant and a United State Army military
17 policeman. I work for Major Harmon, who's the provost
18 marshal, and we work directly for the commander ensuring
19 that law enforcement and security is conducted on the
20 island.

21 You'll notice that you will see no military people
22 doing law enforcement. That's strictly done by the
23 security law enforcement contractor, which is Coastal
24 International Security at the present time. Major Harmon
25 and myself, what we do is we evaluate their performance and

1 ensure that they are doing things in accordance with the
2 rules and regulations that are established for the island.

3 We operate under several different codes that you will
4 have to become familiar with. One is the Hawaii Revised
5 Statutes. That's what generally most of-age are charged
6 under if they're going to be charged with something. If
7 they're Marshallese, then they're pretty much charged under
8 the Marshall Island Revised Code. If they are military,
9 then of course we charge them with the UCMJ for any
10 incidents that we are involved in. So that's something
11 that you will have to be familiar with.

12 Now having said that, you will notice that there's
13 very little crime here. I don't know if you've seen it
14 yet, but we don't have a crime problem. It generally ebb
15 and flows from time to time, and generally you can relate
16 any increases in crime to a particular increase in
17 population or something that happened. I can't be certain
18 what it was right now, but you -- going back in hindsight,
19 I can tell what caused the increase in crime. Even -- even
20 the crime that does occur is pretty much just a petty theft
21 type thing. There are no assaults, no ag assaults.
22 Nobody's killing anybody. Nobody's really harming people.
23 You leave something out, somebody might take it. That's
24 the extent of the crime. Don't leave it out, and we should
25 be okay.

1 Okay. The handout that I handed you is USAKA
2 Regulation 190-10. It is the entry/exit regulation for the
3 island. It will explain to you in great detail how you go
4 about getting someone here, how you go about getting an
5 aircraft here, how you go about getting a sea carrier --
6 seagoing vessel here.

7 We are a restricted facility, so it's not -- you can't
8 just show up. I mean, people don't just arrive and -- we
9 have to know that you're coming. And there's paperwork
10 that has to be completed and approval stamps put on it.
11 Then it comes back to whoever's coming here, and we know
12 that they're coming. Somebody shows up and we don't know
13 that they're coming, they're probably going to be denied
14 access to the facility. And that's covered in Chapter 2.
15 If you look in Chapter 2, it covers personnel, aircraft,
16 and vessels, sea vessels. The entire regulation is good
17 to know. Become familiar with it, you should be okay.

18 We're not going to discuss all the other regulations
19 today, but just as those codes I discussed, there are also
20 going to be numerous USAKA regulations that are in place
21 that we must comply with. And some of the those are the
22 ones that get people in trouble as well. One, for example,
23 just to give you one, is retail sales. If you buy
24 something from a USAKA retail facility, then you can't just
25 transfer it to someone who's not authorized shopping

1 privileges at that retail facility. Just one. There are
2 many others. And we'll be glad to provide you those
3 regulations or information on those at any time. So -- and
4 they're not a big deal, but something you should be
5 familiar with.

6 If a person does get involved in criminal activity or
7 violations of the regulations or policies, then they're
8 subject to being barred from the installation by the
9 installation commander, Colonel Wrenn. And being barred
10 means just that. You got to go. You can't stay. All
11 right?

12 Right now we're going through force protection issues.
13 I don't know how familiar you are with force protection,
14 but you'll notice the entire Department of Defense is
15 generally going back and forth between Bravo, Charley at
16 the current time. So that means we're at a heightened
17 state of security. And that may mean that there may be
18 some delays in processing aircraft or sea vessels when they
19 get here. I don't mean long delays, but it may require
20 that somebody go on with a dog, go on to search for
21 narcotics or explosive devices, things like that. And that
22 will continue as long as we're in a force protection
23 posture that is above normal or Alpha.

24 If you need to be -- if you need clarification on what
25 the force protection postures are, then I can show -- I can

1 get you something with the documentation on that. You want
2 to do it now or just --

3 MR. DOHRMAN: Well, it -- generally, they could --
4 there could be some impact on delays in processing. Other
5 things are, you know, under certain levels, vehicles can't
6 be within 50 feet or certain distances from buildings.
7 There's just things you need to be aware of that you would
8 have to be, you know, complying with once you were here.

9 SFC JONES: That's all covered --

10 MR. DOHRMAN: And those are pretty simple.

11 SFC JONES: Right.

12 MR. DOHRMAN: And it's about four or five pages of
13 procedures; right?

14 SFC JONES: It's only two pages. There are 51
15 measures. And once you look at those 51 measures -- and
16 they're in the phone book. So if you have a phone book,
17 just look inside the phone book. You'll see the force
18 protection measures. And those are what we implement at
19 each stage: Normal, Alpha, Bravo, Charley, and Delta. And
20 they're all designed to make sure that we're all safe.
21 So -- and there aren't any in there that are just totally
22 ridiculous. And if they are, bring them to my attention
23 and we'll review it. Make sure everybody's safe and happy.

24 Any questions?

25 MR. SMITH: Yes. Brent Smith, J.A. Jones. Have there

1 been any significant delays with regard to importation
2 since 9/11?

3 SFC JONES: I would say no to your question. There
4 haven't been any significant delays. The delays are minor,
5 and they're really just happening at the air terminal right
6 now.

7 MR. SMITH: All right.

8 SFC JONES: And they're not really delays. What it
9 is, that you're being inconvenienced a little bit more.
10 Prior to 9/11 you would show up. Check-in's always earlier
11 than -- you check in for the 11:00 o'clock flight at
12 6:00 -- between 7:00 and 8:00 in the morning. Then you
13 show up again at like 11:00, and you just walk through.
14 And pretty much it was walk right onto the plane. You went
15 through the metal detector, the whole nine yards.

16 But now there's -- there are more stringent security
17 procedures in place where some people have to take their
18 shoes off. Every carry-on bag is hand-checked before it
19 gets on the aircraft. So there is somewhat of a delay, but
20 not nearly as major as it may -- might appear. You know,
21 instead of a five-minute check-in, now you probably should
22 allow for maybe 15 minutes.

23 MR. SMITH: Right. And I was speaking more with
24 regard to importation of goods, you know, getting it off
25 the port, this kind of thing.

1 SFC JONES: Right. That has not happened.

2 MR. SMITH: Okay.

3 SFC JONES: There have been no delays in that.

4 MR. SMITH: Okay.

5 SFC JONES: The only way -- the only place I've seen
6 any delay at all is in the air terminal going out.

7 MR. SMITH: Okay.

8 MR. PARIS: Yes, sir. So there's no delays on -- say
9 we had a Matson container coming over. If it reaches port
10 today, would they clear it -- how long?

11 SFC JONES: It will be -- we get a barge every month.
12 And the procedure's the same for any barge that comes in,
13 so there will be no delay. There will be a dog to go on,
14 and that will happen instantaneously, as soon as it arrives
15 and as long as it takes. And it doesn't take -- I don't --
16 I can't give you exact, this is how long it will take, but
17 there's no delay. It's the standard in-processing.

18 MR. DOHRMAN: I don't think that's changed much. I
19 mean, obviously how quick -- a barge can have anywhere from
20 100 to 150 containers. So depending how many containers
21 there are on the barge, all that drives, you know,
22 processing time and things like that. But I don't think
23 there's really been a -- any change per se from what it was
24 before 9/11.

25 MR. PARIS: Thank you.

1 SFC JONES: Anyone else?

2 MR. DOHRMAN: Thank you, sir.

3 SFC JONES: Thank you.

4 MR. LEONG: Just as a reminder, please identify
5 yourself and your company before making a statement or
6 asking a question. Thank you.

7 Gene?

8 MR. DOHRMAN: Let's see what we got next.

9 Tom Dillon, chief of the marine department for
10 Raytheon's up next. Tom will give you an overview of
11 marine services. In this particular case they're somewhat
12 simplified because we're not dealing with any of the outer
13 islands. We're basically dealing with only Kwajalein
14 Island. So Tom, the floor is yours.

15 MR. DILLON: Good morning. My name is Tom Dillon.
16 I'm the manager for marine services at Kwajalein. I work
17 for Raytheon Range Systems Engineering. I manage the port.
18 I'm also the chief pilot and handle all the boats, the
19 ferry boats.

20 As Major Coffey mentioned, we do run a ferry service
21 between here and Ebeye. As of the 23rd of October, we went
22 through a cost-saving measure. We reduced some of the
23 runs. So in the morning, as you schedule your work, just
24 be aware, there is a limited number of seats. We have
25 about a thousand seats in the morning. We are moving only

1 about 800 people. So there is extra room on the boats.
2 But you'd be better off moving -- having people come to
3 work by 6:30 or after 8:00 o'clock.

4 If you go between 7:00, 7:30, that's the peak hour for
5 Raytheon. That's when those two boats -- we have a
6 6:00 o'clock and a 6:20 boat that departs from Kwajalein.
7 They are full every day. We have a 7:00 o'clock and 7:20
8 boat; they're not full. We have a 5:00 o'clock and 5:20
9 boat; they're not full. So you either want to start work a
10 little before Raytheon or a little after Raytheon if you
11 want people to be out at work on time.

12 As just mentioned by Sergeant Jones, we do handle
13 commercial ships in our port. We have two regular shipping
14 companies that arrive here. Matson -- and I have the 2002
15 schedule for those people who would like to have that at
16 the end of the session, and I also have a phone number for
17 the commercial customer service, which happens to be in
18 Phoenix, Arizona.

19 We do have a Matson rep on island, Roy Odani. He
20 works for shipping/receiving, another Raytheon employee.
21 But normally shipping commercial cargo in from the states,
22 you would go through the commercial office in Arizona
23 rather than our local office here. If you're shipping
24 things out, then you'd work through Roy Odani, and he --
25 and that would be scheduled for the Matson barge.

1 PMNO, Pacific Orient -- Pacific Micronesia Orient is
2 another shipping company that has permission to come here.
3 It is a non-US flag carrier, so you need to be aware of US
4 cargo preference laws if you're going to ship on PMNO.

5 PMNO arrives about every 21 days, although they're
6 less reliable than Matson. Matson arrives every 28 days.
7 Matson always arrives on Thursday. PMNO, it depends on
8 what they're running. They can arrive just about any day
9 of the week. You know Matson will always arrive on
10 Thursday.

11 If you decide to ship your things in by a different
12 carrier -- say you contract with a tug company and barge --
13 we are capable of docking most any size barge. We handle
14 Crowley with the 100-by-400-foot-long barges quite easily.
15 We've also handled Sause Brothers' 200-foot barges.

16 And off-loading, when a Matson -- when you ship
17 something on Matson or PMNO, discharge is part of that
18 service. In other words, my stevedores bill their effort
19 to Matson or PMNO to discharge that cargo. If you bring in
20 a private or commercial tug and barge, you would have to
21 set up a work order through the marine department if you
22 want my stevedores to off-load that barge. If you want to
23 off-load it yourself, that's fine. We will just park the
24 barge at either the BSR or Foxtrot, and you can discharge
25 the barge yourself.

1 Since the work is going to be on this island, we don't
2 really need to talk about transporting it on any of my
3 boats. If for some reason you do need to have a special
4 boat between here and Ebeye or something like that, there
5 are rental rates in the rate manual, and you can rent a
6 special boat. But in most cases, the ferry system as it
7 exists should be able to handle just about everybody.

8 The evening ferries we run all the way up to -- 30
9 minutes after midnight we run boats back. So getting
10 people home after work should not be a problem. The only
11 problem is in the morning getting people to work. I just
12 recommend you stay away from 7:00 o'clock, 7:30 time frame
13 so that the workers aren't showing up at work -- late to
14 work every day.

15 Does anybody have any questions? Yes.

16 MR. SMITH: Brent Smith, J.A. Jones. The ferry
17 schedule is the same today that it has been, say, in the
18 past year or so; is that correct?

19 MR. DILLON: It's the same since October 23rd of
20 this -- this fall. What's in the phone book -- the ferry
21 schedule is in the phone book. I believe it's page 103 --
22 is actually last year's, and there is one run in the
23 morning that we do not do. It's the 6:35 run we not longer
24 do in the morning. The other runs are pretty much the
25 same.

1 Last year we were running three boats in the morning.
2 This year, for cost measures, we have laid one of those
3 boats up, and we're only running two. We make seven runs
4 in the morning starting at 4:20 and ending at 7:20. Those
5 are departure from Kwajalein times. Last year we did eight
6 runs. We did that -- we had a 6:35 run last year we don't
7 do this year.

8 MR. SMITH: Okay. Thank you.

9 MR. DILLON: Okay.

10 MR. DOHRMAN: Thanks, Tom.

11 Russ?

12 Some of the comments actually that Tom made, you know,
13 if you needed stevedoring help or a special ferry or
14 whatever, kind of in order to do some of those things, you
15 need to be -- have an account and such things set up with
16 the finance office, and that's Raytheon Finance. And Russ
17 is going to talk -- Russ is from the finance office, and
18 he's going to talk a little bit about how you set up that
19 account and those types of things. Russ?

20 MR. CAMAUCHO: Good morning. I'm Russ Camaucho. I'm
21 with Raytheon, of course, and KLS, as part of the contract.
22 The finance operation is just one of the many things that
23 we do to manage the infrastructure here on the island for
24 USAKA. We're the Army's bookkeeper. We do the books and
25 do all of the traditional accounting types of functions.

1 And we also do a number of functions that are more service
2 related that would be more of interest to you as
3 contractors.

4 I manage the cash office, the billing function, the
5 accounts receivable function. And those three particularly
6 would be of interest to you because they are service
7 functions that you would be using if you're working on the
8 island.

9 The finance office is located in building 900, which
10 is right on the corner on the west side of the terminal
11 building. It's clearly marked. And that's where the cash
12 office is. And that's where we would handle any financial
13 transactions that Gene was referring to.

14 The major tool that we use to capture costs and to
15 generate invoices and to take care of those types of
16 financial transactions with contractors on the island is a
17 thing called a DO, which is a development order. We would
18 assign one or more series of those development orders to a
19 particular contractor. As I look around the room, I see
20 some familiar faces of people I've worked with over the
21 last few months doing that type of thing. Depending on the
22 volume of business that would be run through those various
23 DOs, there might be deposits required. That's something
24 that we can work out as we go through and see what the
25 volume is and what the exposure is.

1 We also work very, very closely out of what we call
2 the FPRM, the Financial Policy and Rate Manual. That's a
3 USAKA document which is published by USAKA each year and
4 which is our Bible as to how we charge for the various
5 services, what loads we apply to those services or
6 materials here on the island. And it's everyone's
7 assurance that everyone is treated equally because that is
8 the Bible that we refer to.

9 In there is everything from the rates that are charged
10 for a kindergarten student or an elementary school student
11 to billeting charges to square foot charges for office
12 space, the equipment rental charges that were handed out in
13 a separate list, kilowatt hour charges for electricity.
14 And depending on how your contract is set up, that could be
15 actually metered for you at your individual facility.
16 Monthly invoices come out of my function then based on the
17 meter readings that we get from the utilities department.

18 So all of those types of financial transactions flow
19 through based on the rates and the guidelines that are set
20 up in the Financial Policy and Rate Manual. They flow
21 through my function in terms of the invoice and the payment
22 mechanism. And as I said, they're very uniformly applied.

23 I am the keeper of the Financial Policy and Rate
24 Manual on the Raytheon side of the house. It sits right on
25 my credenza. If anybody has questions or issues, that's

1 the document we refer to. Come on in and see me. My
2 office is right behind the cash office in building 900.
3 I'd be more than happy to work with you.

4 We subscribe to what Lieutenant Colonel Morris says.
5 We're all in this together. We try to run the finance
6 operation in accordance with that. We run it
7 professionally, but we're here to support the mission and
8 to support everyone that's here. So he wants us to be a
9 very cooperative function. He tries to do things the right
10 way, but tries to make sure that -- that we are supportive
11 and cooperative.

12 What else can I cover? Other issues? Is that about
13 what you were concerned about in terms of the overview?

14 MR. DOHRMAN: Unless somebody has some questions or
15 something, that's kind of the overview as it may relate
16 between you as the contractor and the base operations
17 finance office, which is essentially the government finance
18 office.

19 MR. CAMAUCHO: Any questions at all? Okay.

20 MR. DOHRMAN: I might add, typically we will
21 include -- I think, Rodney, and correct me if I'm wrong.
22 But we typically -- within this amendment that will be
23 coming out, or one of the amendments, the Financial Policy
24 and Rate Manual in its entirety will be in there.

25 MR. LEONG: Yeah, it's already included.

1 MR. DOHRMAN: Is it already? Okay. So it's already
2 in the solicitation.

3 MR. CAMAUCHO: Thank you.

4 MR. DOHRMAN: Thanks, Russ.

5 MR. LEONG: Okay. I think this is a good time to take
6 a break. Five minutes.

7 (Whereupon, a recess was taken.)

8 MR. ASKEW: I'm Lew Askew. I'm the resident engineer
9 here with the Army Corps of Engineer, Honolulu District,
10 for those of you who don't know me. Did I leave anything
11 out?

12 Just sitting here thinking about all the stuff that's
13 been said this morning, you're probably -- if you haven't
14 done work here before, you're probably wondering, how do
15 you do construction operations on Kwajalein with all the
16 constraints that all the previous speakers have talked
17 about? But believe me, it can be done, but it takes quite
18 a bit of effort. It takes quite a bit of management effort
19 on your part to be able to integrate all the different
20 things that you've got to do, be it a logistical problem of
21 shipping out the equipment and materials and manpower to
22 build a facility.

23 As you can imagine, there's a lot of operations going
24 on here that have to do with missile operations, space
25 operations that are going to be more important than your

1 day-to-day construction operations, that are going to
2 perhaps impact on your construction operation, a lot of
3 considerations there, and very important that you -- your
4 firm have a very good track record of performance and
5 experience in management of construction operations.

6 What I'm going to talk about a little bit is some of
7 the -- not the technical details of the equipment that --
8 the materials you're going to use. It's already been
9 mentioned by Gene and others that we're in a very corrosive
10 atmosphere here, and all the technical provisions talk
11 about special equipment and materials that we require here
12 that give a better life expectancy. You can go around here
13 and see a lot of things that are corrosion problems, and
14 the life expectancy is much less. So when we build
15 something, obviously designed into the specifications are
16 materials that are going to last a whole lot longer due to
17 the corrosive environment.

18 When you do excavation, you're going to find that this
19 was a battlefield site back in World War II, and there's
20 all sorts of potential there for unexploded ordnance.
21 There may be some bones that may be dug up or certain other
22 artifacts. So the military installation here's very keen
23 on those, and all those things can impact your construction
24 operations.

25 Talk a little bit about schedule. You all are going

1 to prepare proposals, and those are due, I guess, in the
2 March time frame, and we're looking at a contract award in
3 the April time frame. Between now and contract award, all
4 of the questions or anything that you need really need to
5 go to Honolulu district or my headquarters in Honolulu. If
6 you call my office here on Kwajalein, all we're going to do
7 is refer you to Honolulu because we're not really the
8 office that's administering the contract until after
9 contract award.

10 When contract award will occur, between contract award
11 and notice to proceed, we would -- I'll be calling on one
12 of the firms, whoever is successful, saying, you know, we
13 need to schedule a preconstruction conference. And I'm
14 just going to refer you to a number of clauses that are in
15 section 00700 and 00800. Those are pretty much the clauses
16 that have to do with the administration of the contract,
17 the management, your management, if you will, of the
18 construction operations under the contract. So, like I
19 said, sometime between contract award and notice to
20 proceed, we'll schedule a preconstruction conference.
21 That's on page 26 of section 800.

22 We'll also be doing a partnering. And for those of
23 you all that haven't been involved in a partnering before,
24 essentially partnering is this very important concept out
25 here whereby we sit down and -- more or less informal

1 arrangement, not unlike what we're doing today, and we talk
2 about things, you know. You may have some concerns about
3 being able to do your construction operations and how they
4 impact on the missile and other operations that are
5 performed here. But essentially we're trying to work
6 things out on a basis that's beneficial to both sides, both
7 your construction operations and the operations here.

8 So one of the things you probably want to look at --
9 and that's on page 7 of section 800 -- I'm sorry -- yeah,
10 800, that you have a requirement to provide a facilitator.
11 And a facilitator would be somebody who would kind of lead
12 us through the partnering workshop and be someone who would
13 be acceptable for us. And I've got some names of some
14 folks who have done partnering facilitating in the past
15 that would be acceptable to us. So I just mention that at
16 this point.

17 Performance work by the contract, of course, that gets
18 into the amount of labor that you, the prime contractor,
19 has to actually provide on site. That's in section 800 on
20 page 7.

21 Sergeant Jones already talked about entry/exit
22 control. These are all the details, and this regulation is
23 made part of the contract on page 18 of section 800.

24 Major Coffey talked about housing facilities. And the
25 area -- there is a space here on Kwajalein Island for you

1 to set up a man camp, and I think up to three of your
2 senior people can have family housing trailers here on
3 site. And again, that's on page 21 of section 800.

4 Our mission, how important it is, management,
5 logistical concerns, and some of the particulars about
6 management of the job site is found on page 23 that you
7 would be required to do.

8 I mention the environment here, is interesting, and
9 you would be required to get a mechanical digging permit
10 which would be for the purpose of monitoring any trenches
11 for utilities. And that's on page 25.

12 Now everything I've talked about so far have been
13 clauses out of section 800, which are special contract
14 requirements. I'm going to talk about now a few clauses
15 out of section 700, 00700, and these are contract clauses.

16 Operations and storage areas, if you -- you're going
17 to get an opportunity after lunch today to visit the site,
18 where it's going to be. And one of the things you're
19 probably going to say is, jeez, we'd be pretty restricted
20 in here. How are we going to get all of our equipment
21 laydown? Where are we going to mobilize our materials and
22 equipment for the job site? And it's going to be pretty
23 tight down there. It's going to be a pretty tight area, so
24 you're going to have to put quite a bit of thought into how
25 you're going to do that. And one of the things you'll have

1 to do is give us a plan, simple little layout sketch, which
2 we'll get to the USAKA folks and get approval as to how
3 you're going to mobilize and use these storage areas at the
4 site.

5 Other big issue, accident prevention, clauses in both
6 700 and 800. It starts with clause 52.236-13, is the
7 general accident prevention clause. Just want to say that
8 we have operated for the last two and a half years here,
9 over 500,000, over half a million man-hours without a
10 lost-time accident, without a recorded accident on any of
11 our contracts. That's a good record that we certainly hope
12 to continue to achieve. And there are any number of
13 contract requirements that have to do with accident
14 prevention. And we've got a big, thick, red safety manual
15 that we'll give to you as to how safety has to be
16 performed.

17 The last contract clause I want to touch about real
18 briefly is on page 77 of section 00700. The gentleman
19 from -- Dillon, Matt [sic] Dillon just spoke about, and
20 that is, you are required to use a US flag carrier in site
21 to bring your material and equipment here. And there is --
22 you know, a number of eyes are looking out there. So we've
23 run into one issue on contract a couple years ago where
24 PMNO was used, and we had to enter into a contract
25 modification to take a credit for the difference between a

1 US flag carrier and non-flag carrier. So Matson is the
2 scheduled flag carrier. I think he mentioned Crowley and
3 one or two others that can be contracted to bring materials
4 and equipment out to the site.

5 The last clause I want to mention is section 01312.
6 It's a relatively new requirement in our contracts. This
7 will be the second contract that will have it in. It's a
8 new computer system called the Resident Management System.
9 It's a Windows-based system. We'll actually give you some
10 software to plug in, and it has to do with the management
11 of submittals and other things that we use to administer
12 the contract. Just want to mention that to you because
13 it's relatively new. It's probably nothing -- nothing that
14 isn't normally done in the administration of our contracts,
15 but it kind of wraps it all together up into a new computer
16 program.

17 Those are the main clauses that I wanted to mention
18 this morning for you to -- if you haven't done work out
19 here before to be particularly keen on as you prepare your
20 proposals. Of course, we'll get in more into the nuts and
21 bolts of how we administer the contract, how you get paid,
22 all the routine administration things at the
23 preconstruction conference for whoever the successful
24 awardee is. That's all I have to say. Thank you.

25 MR. KAM: Good morning. My name is David Kam, and I'm

1 the chief of contracting at the Honolulu Engineer District
2 at Fort Shafter. And I'll also serve as the contracting
3 officer for award of this contract. As Mr. Askew
4 mentioned, he will administer this contract after award.
5 And Mr. Askew will be the administrative contracting
6 officer, and he will execute modifications up to 500,000.
7 Modifications above that threshold will be sent to my
8 office at Fort Shafter for award by a contracting officer
9 in my office.

10 I need to mention that any comments or remarks that
11 are made at this conference or during the site visit will
12 not alter or change the terms and conditions of the
13 solicitation. The only way that can be done is by formal
14 amendment.

15 Rodney mentioned that the transcript notes will be
16 distributed to you all. If there's contradictions in those
17 notes, you know, in relationship to our solicitation, the
18 terms and conditions of the solicitation will take
19 precedence; okay?

20 The contract specialist that is working on this in my
21 office is Rene Hicks; okay. It -- this will be a
22 competitive negotiated procurement, and we will award a
23 firm fixed-price contract. The estimated price range of
24 this project, the magnitude is between 10 and 25 million.
25 In amendment 3 that was issued on 4 January, last week

1 Friday, we had a correction to that. So it is from 10 to
2 25 million.

3 Due to the stringent security considerations at
4 Kwajalein Atoll, a contract under the solicitation shall be
5 awarded only to a United States contractor or to a Marshall
6 Islands contractor. You can see section 100,
7 paragraph K2, restriction on award, for the definition of a
8 United States contractor or a Marshall Islands contractor.
9 That paragraph also addresses the requirements that a joint
10 venture must meet to qualify as a United States or a
11 Marshall Islands contractor.

12 I'd like to point out that -- to follow the
13 instructions in section 210 regarding proposal commission
14 requirements. Offerors must submit a technical and a price
15 proposal. And what we're asking you to do is to make sure
16 that these documents are bound separately. So don't put
17 the technical and price proposal -- don't bind them
18 together. These should be separate documents.

19 The offerors are also required to submit with its
20 proposal an offer guaranty using standard Form 24 bid bond.
21 See section 100, paragraph S28-3, penal sum and form of
22 offer guaranty.

23 The government intends to award without discussions
24 with the offerors. And we intend to award to the offeror
25 which is determined technically acceptable and has the

1 lowest priced offer. Therefore, the offerors' initial
2 proposal should contain their best term -- terms from a
3 price and technical standpoint.

4 When you submit your proposal, please indicate a point
5 of contact and that person's fax number. The proposal due
6 date will be 1 March, 2:00 p.m., Hawaiian Standard Time.
7 And we will not accept any fax or e-mail proposals. And I
8 must caution you that -- and this happened -- this happened
9 last fiscal year. When we say 2:00 p.m. Hawaiian Standard
10 Time, that's it. And if you or a courier comes in a minute
11 after that, it's considered late. We cannot consider your
12 proposal. And people -- I don't understand why they do
13 this. They always wait 'til the last minute. And because
14 of the THREATCON situation, the -- it is harder to get
15 access to the installation. So plan ahead. Don't wait
16 'til the last minute. Companies put a lot of effort, time,
17 and money preparing their proposals; and it comes late, we
18 can't consider it.

19 Okay. Richard Say will discuss the evaluation factors
20 for award.

21 MR. SAY: Good morning. I'm Richard Say, and I work
22 in the Office of Counsel at the Honolulu Engineer District
23 in Honolulu, Fort Shafter. We provide the support for the
24 field, Mr. Askew and his operation here. We provide the
25 legal support. And I'm just here to talk to you this

1 morning a little bit about the evaluation factors we intend
2 to use to select the successful offeror. You'll find the
3 factors in section 210 of the proposal that's added by
4 amendment number 3 in the solicitation.

5 As Mr. Kam has already explained, we're -- this time
6 we're using a low price, technically acceptable method of
7 selecting offerors. There are four technical factors that
8 will be evaluated separately from the price. They'll be
9 graded on a pass/fail scale, which means we'll go through
10 and decide if -- we'll have a board who will go through and
11 decide if a technical factor is acceptable, if the offeror
12 indicates that it has sufficient background to be
13 acceptable. And if not, then we'll figure out how to deal
14 with it, if we have to have discussions or we have to -- if
15 we just find the proposal unacceptable on its face. After
16 we've done the technical evaluation, we'll go to price.
17 And then we'll go by low price, technically acceptable. I
18 think that's about all there is to the evaluation process.

19 We're down to the question-and-answer portion of the
20 conference. You're free to ask questions.

21 MR. LEONG: Yeah. The way we will handle the
22 question-and-answer period is to go one by one. I want you
23 to state your questions clearly. Hopefully you'll write
24 your questions down if you want an official answer to them.
25 We'll try our best to respond to your questions at this

1 time. However, we're not -- we may not be able to do that.
2 But we will take back your question and consult with
3 whoever we have to consult with, and we'll get responses to
4 you by amendment. So --

5 MR. SMITH: Brent Smith, J.A. Jones. A question about
6 the questions, Rodney. If we have a question verbally
7 today and you're able to respond, that becomes part of the
8 record, and there would be no need to follow that up in
9 writing; would that be correct?

10 MR. LEONG: Yes, however, on very -- well, some
11 questions may be very clear and be easy to respond to. On
12 questions that are -- or may require further consideration,
13 we may respond to some degree today and follow up with more
14 later on. It would behoove you to state your question to
15 us in writing to make sure we understand it clearly. Of
16 course, we have a transcript, but just to ensure that, you
17 know, we have your question accurate.

18 MR. SMITH: I understand.

19 MR. LEONG: It's just a surefire -- sure way of making
20 sure we address your specific concern.

21 MR. SMITH: Okay.

22 MR. LEONG: If you want to, you can rely on the
23 transcript, but we would prefer that you provide it to us
24 in writing.

25 MR. SMITH: Right. Okay.

1 MR. KAM: Yeah, I just reviewed -- last night I
2 reviewed the preproposal conference notes on a project
3 about two years ago. And I could see that, first of all,
4 when you submit your questions in writing, we clearly
5 understand what you're asking. And in our responses, we
6 have the time to thoroughly research and give you a
7 response.

8 MR. SMITH: Yeah. If you have a question about a
9 clarification item on a drawing, for example -- and of
10 course, in my case, I haven't seen all the documents. I've
11 just more or less had a cursory look. But it is
12 appropriate to ask a technical question today about a
13 clarification issue on a drawing, or do you recommend that
14 that -- that we wait and do that subsequently in writing?

15 MR. LEONG: Well, since I didn't bring any designers
16 with me, it's -- I probably would not be able to respond to
17 your technical question. So yes, you're probably better
18 often submitting a written question if it deals with a
19 technical aspect of the contract.

20 MR. SMITH: But I guess no harm in asking the question
21 today anyway.

22 MR. LEONG: No harm in asking.

23 MR. SMITH: Okay. Certainly. I understand.

24 MR. LEONG: Yeah.

25 MR. SMITH: Depends upon the nature of the question as

1 to how detailed or -- your ability to answer it right now.
2 Just depends on the question.

3 MR. LEONG: Right.

4 MR. SMITH: I understand. Okay.

5 MR. LEONG: Okay. Any other general questions?

6 MR. WOODALL: Sammy Woodall, Dick Pacific. If we've
7 got a list of questions that we want to turn into you
8 today, can we do that today before we leave --

9 MR. LEONG: You can turn it to us.

10 MR. WOODALL: -- and that you carry it back to
11 Honolulu --

12 MR. LEONG: Yes.

13 MR. WOODALL: -- or do you want it mailed to you?

14 MR. LEONG: You can submit it today.

15 MR. WOODALL: Okay.

16 MR. LEONG: You can fax it in within the next couple
17 days if you want. You can send it by e-mail. You know,
18 we'll address it anyway that you send it to us.

19 MR. WOODALL: Okay. Whichever one.

20 MR. LEONG: Like I indicated earlier, the sooner you
21 get it to us, the more time we will have to look at it and
22 get you good responses before -- or early enough so that
23 you can consider it in your proposal preparation. The
24 later we receive questions, it will give us less time, and
25 we may not be able to respond to you in time for you to put

1 it in your proposal to submit it by 1 March.

2 MR. WOODALL: If it's okay then, I'll just go ahead
3 and give you this list after the meeting here today.

4 MR. LEONG: Yes. It's your choice whether you want to
5 go over the questions with us or just submit it.

6 MR. WOODALL: I'll just -- I'll just go ahead and
7 submit it. Okay.

8 MR. LEONG: Okay.

9 MR. KRAMER: David Kramer, Pacific International.
10 We're a company based out of Majuro. And I wanted to ask,
11 would we be able to house our Marshallese workers on Kwaj?

12 MR. ASKEW: House your what workers on Kwaj?

13 MR. KRAMER: House our Marshallese workers on Kwaj.

14 MR. DOHRMAN: Typically that would be -- Gene Dohrman,
15 USAKA. I can't say yes. That would be an exception to
16 policy that would have to be approved by the commander.

17 MR. KRAMER: So we would have to put in -- for each
18 individual person we'd want to house, I would have to ask
19 the commander?

20 MR. DOHRMAN: Well, you know, in -- we'd want to do it
21 as a group if we can, obviously, as opposed to one at a
22 time if it is for a group. In the past, you know, in some
23 situations we have done that. And it has been approved,
24 you know. Each and every time it -- it goes through the
25 provost marshal and the security folks, and everybody gets

1 a chance to input, provides input to the commander, and
2 then it goes to him for approval or disapproval.

3 MR. LEONG: Okay. Let's start from this end and just
4 go through everyone, whether they have a question or not.

5 MR. WOODALL: No, sir. I don't have anything. I'm
6 going to submit you some written questions.

7 MR. LEONG: Okay.

8 MR. WOODALL: I don't have anything.

9 MR. BRADLEY: Mike Bradley with San Juan. No, I don't
10 have any questions.

11 MR. HAWK: Frank Hawk with San Juan, no.

12 MR. McALLISTER: Troy McAllister with San Juan, no.

13 MR. COTTON: No.

14 MR. GARCIA: Sam Garcia with Nelson Refrigeration, no.

15 MR. SMITH: Brent Smith, J.A. Jones. Yeah, couple
16 questions. One of the drawings under earthwork and
17 demolition has a note about permits for cultural resources.
18 And it states the contractor shall include costs for
19 monitoring cultural resources. I think I understand the
20 general nature of that note, but is it possible to get some
21 clarification on what -- what you're expecting there? When
22 I see contractor to include cost for monitoring cultural
23 resources, I mean, I think of applying some obvious
24 common-sense logic as to what happens if you discover, you
25 know, some artifacts or something. But is there -- can you

1 clarify that note in any way? You understand my question?

2 MR. LEONG: You're asking whether you need to have an
3 archeologist on site or --

4 MR. SMITH: Well --

5 MR. LEONG: -- something else will suffice?

6 MR. SMITH: Sort of. I don't think that's the intent
7 of the clause, but it -- it just raises a question in my
8 minds when I see that when you say contractor to include
9 costs for that.

10 MR. LEONG: I'm going to have to consult with our
11 environmental folks back in the office. So can you submit
12 that in writing?

13 MR. SMITH: Certainly.

14 MR. LEONG: Gene, do you have any comments about that?

15 MR. DOHRMAN: We need to respond to that together.

16 MR. LEONG: Okay. Right.

17 MR. SMITH: Okay. And of sort of a general nature
18 with regard to the tank rehab, there are several notes on
19 the drawings that states that contractor -- let me back up.

20 Obviously repair of shrinkage cracks in existing
21 tanks, there's a lot of subjectivity behind that in that it
22 may not be clear as to what requires repair or not. So you
23 guys have apparently try to help clarify that scope by
24 stating that contractor shall assume a certain quantity of
25 shrinkage cracks and shall allow for X gallons of epoxy or

1 whatever. And again, I have not read all the documents. I
2 don't know if this may be clarified elsewhere in there.
3 But is it -- would it be correct to assume that if the
4 quantities stated are plus/minus, whatever the typical unit
5 price variation clause would be, that that -- that a
6 modification follows? You understand the question? Lew?

7 MR. LEONG: Yeah.

8 MR. ASKEW: Say it again.

9 MR. SMITH: How hard are those quantities?

10 MR. ASKEW: What -- quantities for what?

11 MR. SMITH: An example, Lew, would be -- I don't know
12 the drawing number. Epoxy for concrete shrinkage crack
13 repair, existing shrinkage cracks, something's to the
14 effect contractor shall assume 150 gallons of epoxy for
15 500 linear feet of shrinkage cracks tanks per tank. And it
16 has a similar note for the floor as well. My question is,
17 if we find a -- you know, if we execute a lesser quantity
18 of shrinkage cracks and epoxy or greater, is that -- will
19 that be a modification to the contract?

20 MR. ASKEW: Well, is there a unit price item in the
21 bidding scheduled for this?

22 MR. SMITH: As I said before, I don't know because I'm
23 not fully familiar with the documents right now. But I
24 assume not.

25 MR. LEONG: No.

1 MR. SMITH: I didn't think there was -- I'm assuming
2 there's not unit prices in there to cover that work, that
3 this is a clarification on this part of the lump sum.

4 MR. ASKEW: And -- okay. So you're saying basically
5 the contract says that you're to use so much epoxy for so
6 many linear feet of crack?

7 MR. SMITH: Yeah. Again, I believe it says contractor
8 shall assume a quantity of epoxy for an anticipated linear
9 footage of cracks, yeah.

10 MR. ASKEW: Since -- we're going to have to look into
11 that probably.

12 MR. DOHRMAN: Yeah.

13 MR. SMITH: Okay. That type of note is -- is on the
14 tank scope of work for several -- for several locations,
15 so -- that's all I have now. Thank you.

16 MR. LEONG: Sir?

17 MR. MIDYETT: Brian Midyett with Kiewit. My only
18 question is with the precast for that cold storage
19 building. Would you guys accept any VEs in the technical
20 proposal? I guess it would be a VE over technical and
21 price for, you know, different wall type?

22 MR. ASKEW: Well, certainly we encourage value
23 engineering cost proposals, VECs. From a practical
24 standpoint, would something like that be accepted or not?
25 Of course, you know, we'd have to get with our customer and

1 evaluate what you're proposing to use in lieu of precast
2 concrete. As you can see, most everything out here that's
3 not concrete corrodes, you know, if it's --

4 MR. MIDYETT: Well, it's just -- it's PCI
5 specifications, and so -- I mean, I'm saying, you're either
6 going to build it in a plant in Honolulu or a plant in Guam
7 is what you're limiting yourself with -- with that --

8 MR. ASKEW: Right.

9 MR. MIDYETT: -- to those standards. So I'm saying,
10 you know, in lieu of that, you could build up on site or
11 something of that nature.

12 MR. ASKEW: Well, we would certainly encourage you to
13 submit value engineering change proposals. We certainly
14 would consider them. But it depends on what you're
15 offering in lieu of that as to whether we'd consider it or
16 not. I can be honest and frank with you. We usually --
17 it's been my experience that we don't have a really good
18 track record of approving value engineering proposals for
19 most things.

20 I think if you read that clause, it's got to provide
21 the same function, save the government considerably for it
22 to really be considered. And usually the government's
23 pretty much got their mind made up as to what they want.
24 But, you know, certainly there's -- there's room to
25 consider everything that's out there. And we encourage

1 that.

2 You know, if you do get a value engineering change
3 proposal, you share in the cost savings of roughly -- what
4 is it, 45 percent? So I do want to encourage value
5 engineering change proposals. Probably before you went
6 through the process of actually submitting the proposal,
7 you'd want to come over and talk to us, and we'd give you
8 kind of our informal insight as to whether we thought there
9 was a -- you know, much of a chance of it being approved or
10 not before you spend a lot of time putting together the
11 technical aspects and the costs of the proposal. But yeah,
12 we certainly would consider it.

13 David?

14 MR. KRAMER: David Kramer, Pacific International, no.

15 MR. SCHUMANN: Frank Schumann, Unitek Technical, no
16 questions.

17 MR. PARIS: Roy Paris, Unitek Insulation. This CD
18 might answer my questions. I didn't look at it yet. But
19 as far as disposal for the hazardous material, would the
20 government be responsible for the shipping out of it, or
21 would the contractor be responsible? And who would be
22 actually signing off for the EPIE number that we need to
23 get the material off the island?

24 MR. DOHRMAN: Gene Dohrman, USAKA. We need to respond
25 to that formally. I would tell you, the contractor's

1 responsible for ultimate disposal, you know. The ID that
2 would go on the manifest is the USAKA ID.

3 MR. PARIS: USAKA.

4 And who would be the responsables for signing? Anyone
5 in particular?

6 MR. DOHRMAN: Typically they're a representative from
7 the base operations contractor environmental office or the
8 USAKA environmental offices here.

9 MR. ASKEW: There's a section in the contract, 1572,
10 that has to do with construction and demolition wastes
11 management. And some of what you're talking -- and as put
12 specifically in section 2120, transportation and disposal
13 of hazardous materials, probably you'll find answers in
14 that section.

15 MR. LEONG: If that doesn't satisfy you, please submit
16 a question for further clarification.

17 MR. PARIS: The only other thing, if we could get a
18 price list on lodging. Where would we -- where could we
19 put up the men if they're not going to be here for a long
20 time? What's available?

21 MR. DOHRMAN: Typically that would -- you know,
22 something like that would be a -- that's an exception. I
23 mean, bottom line is the contractor is responsible to
24 provide housing for his personnel. We make some minor
25 exceptions to that if somebody's in for a few days or

1 something like that. But the bottom line is you're
2 responsible to provide housing for your people, whether
3 it's for three weeks or three years or whatever the
4 duration might be.

5 MR. ASKEW: You couldn't really depend on government
6 housing being available because there are certain times
7 during the year when the government has missions out here
8 and there's literally no housing available. It's all used.

9 MR. PARIS: Thank you, sir.

10 MR. MADDISON: Thomas Maddison, JENMEI, no questions.

11 MR. TOELKES: Robert Toelkes, International Bridge, no
12 questions.

13 MR. KUROSAWA: Shuichi Kurosawa, no question.

14 MR. LEONG: Okay. Well, that -- we're ahead of
15 schedule. If this afternoon you have a chance to take a
16 look at the site and any questions come up in your mind,
17 please jot them down and submit them to us. And if in the
18 next couple days you think of some questions, please send
19 it to us.

20 MR. KAM: Rodney, you will receive all the questions?

21 MR. LEONG: Yeah, all questions should be submitted to
22 me. I will provide you the sign-up list of all attendees
23 of this conference which has my telephone number, my fax
24 number, my e-mail address. Please send the -- it's also in
25 the solicitation.

1 MR. KAM: Yeah, Rodney's fax number e-mail address is
2 also in the solicitation under site visit, section 100,
3 page 8.

4 MR. PARIS: Are we allowed to take pictures at this
5 site walk-through?

6 MR. DOHRMAN: Yes.

7 MR. SMITH: Rodney? Brent Smith, J.A. Jones. The
8 list of contacts here, can we get a copy of that this
9 afternoon at the site visit?

10 MR. LEONG: Yeah.

11 MR. SMITH: Okay.

12 MR. LEONG: It will be provided after lunch.

13 MR. SMITH: Okay. Great. Okay.

14 MR. LEONG: Okay.

15 MR. DOHRMAN: Rodney? I think it tells you on the
16 agenda there, but the bus will be leaving from in front of
17 704 where it left today. We'll be going down to see the
18 water tanks first. Then we'll be coming back to see the
19 site of the new facility. And then we'll go from that site
20 to the existing cold storage, which is totally being
21 demolished under this contract. And then following that,
22 we'll do an island tour, just a windshield tour to kind of
23 drive you -- or drive those of you that want to participate
24 around the island and point out different things.

25 MR. LEONG: Okay. The pickup time is 12:30 in front

1 of building 704, after lunch.

2 At this time it's -- we're a little over an hour
3 early. I don't know if we're able --

4 MR. DOHRMAN: I called the bus. Hopefully it's out
5 here. I'll see.

6 MR. LEONG: Well, in closing, I'd like to thank all of
7 you for participating in our preproposal conference. And
8 we'll see you after lunch.

9 (Whereupon, at 10:26 a.m., the meeting was concluded.)

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1 STATE OF HAWAII)
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2) SS.

3 I, Valerie Mariano, Certified Shorthand Reporter in
4 and for the State of Hawaii, do hereby certify:

5 That on Wednesday, January 9, 2002, at 8:40 a.m. the
6 foregoing proceedings were had before me; that the
7 proceedings were taken in computerized machine shorthand by
8 me and were thereafter reduced to print under my
9 supervision; that the foregoing represents, to the best of
10 my ability, a correct transcript of the proceedings had in
11 the foregoing matter.

12 I further certify that I am not counsel for any of the
13 parties hereto, nor in any way interested in the outcome of
14 the cause named in the caption.

15

16 Dated:

17

18

19 Valerie Mariano, C.S.R. #353
 Notary Public, State of Hawaii
20 My Commission Expires: June 16, 2002

21

22

23

24

25

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SECTION 01900

MISCELLANEOUS PROVISIONS

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM A 240 (1993) Heat-Resisting Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels

1.2 SUBMITTALS

Government approval is required for submittals with a "GA" designation; submittals having a "FIO" designation are for information only. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-01 Data

Equipment Data; FIO.

A list of all equipment furnished under this contract. This list shall include, but not be limited to, each piece of equipment with a serial number, and shall include all information shown on the manufacturer's nameplate, so as to positively identify the piece of equipment. This list shall also include the cost of each piece of equipment (less installation costs) F.O.B. construction site. This list shall be furnished as soon as possible after equipment is purchased. The list shall consist of one (1) reproducible and three (3) copies, and shall be furnished to the Contracting Officer not later than thirty (30) calendar days prior to completion of any segment of the contract work which has an incremental completion date.

SD-04 Drawings

As-Built Drawings; FIO.

SD-07 Certificates

Products Containing Recovered Materials; FIO.

The Contractor shall submit manufacturer's certification attesting that product meets or exceeds EPA's recovered material guidelines.

SD-09 Reports

Inspection of Existing Conditions; FIO.

A written report with color photographs noting the condition of the existing facilities at the time of the inspection. One copy of the report including photographs shall be submitted to the Contracting Officer, prior to construction.

Test Resport; GA.

A written report from water tank leakage test in accordance with ACI 350.1R.

SD-18 Records

Dust Control; GA.

Method(s) of dust control.

Excavation/Trenching Clearance; FIO.

Prior to start of any excavation or trenching work, the Contractor shall obtain clearance, in writing, from the appropriate communications agency and base or area engineer. Copies of all correspondence shall be provided the Contracting Officer. Normal coordination time for obtaining the necessary permits is approximately fifteen (15) calendar days. The Contractor shall advise the Contracting Officer promptly when it appears that the normal coordination time will be exceeded.

Condition of Contractor's Operation or Storage Area; FIO.

The Contractor shall submit to the Contracting Officer photographs and/or videos depicting the condition of the Contractor's Operation or Storage Area.

1.3 CONTRACTOR QUALITY CONTROL

To assure compliance with contract requirements, the Contractor shall establish and maintain quality control for materials and work covered by all sections of the TECHNICAL REQUIREMENTS in accordance with Section 01451 CONTRACTOR QUALITY CONTROL. Records shall be maintained for all operations including sampling and testing.

1.4 AS-BUILT DRAWINGS

As-built drawings shall be in accordance with SPECIAL CONTRACT REQUIREMENT entitled "AS-BUILT DRAWINGS".

1.5 DUST CONTROL

The amount of dust resulting from the Contractor's work shall be controlled to prevent the spread of dust to occupied portions of the construction site and to avoid creation of a nuisance in the surrounding area. Use of water will not be permitted when it will result in, or create, hazardous or objectionable conditions such as flooding and pollution. Measures shall also be taken for dust control along haul routes and equipment parking areas.

1.6 PROTECTION

The Contractor shall take all necessary precautions to insure that no damages to private or public property will result from his operations. Any

such damages shall be repaired or property replaced by the Contractor in accordance with the CONTRACT CLAUSES entitled "PERMITS AND RESPONSIBILITIES" and "PROTECTION OF EXISTING VEGETATION, STRUCTURES, EQUIPMENT, UTILITIES, AND IMPROVEMENTS", without delay, and at no cost to the Government.

1.6.1 Warning Signs and Barricades

The Contractor shall be responsible for posting warning signs or erecting temporary barricades to provide for safe conduct of work and protection of property.

1.6.2 Protection of Grassed and Landscaped Areas

The Contractor's vehicles shall be restricted to paved roadways and driveways. Vehicles shall not be driven or parked on grassed and/or landscaped areas except when absolutely necessary for the performance of the work and approved in advance by the Contracting Officer. Grassed or landscaped areas damaged by the Contractor shall be restored to their original condition without delay and at no cost to the Government.

1.6.3 Protection of Trees and Plants

Where necessary, tree branches and plants interfering with the work may be temporarily tied back by the Contractor to permit accomplishment of the work in a convenient manner, so long as they will not be permanently damaged thereby. If this is not feasible, they may be pruned, subject to written approval by the Contracting Officer.

1.6.4 Protection of Building From the Weather

The interior of the building and all materials and equipment shall be protected from the weather at all times.

1.7 RESTORATION WORK

Existing conditions or areas damaged or disturbed by the Contractor's operations shall be restored to their original condition, or near original condition as possible, to the satisfaction of the Contracting Officer.

1.8 REMOVAL AND DISPOSAL

The Contractor shall salvage or recycle waste to the maximum extent practical as it relates to the capabilities of local industries. A record of the quantity of salvaged or recycled materials shall be maintained by the Contractor during the length of the project and submitted to the Contracting Officer at acceptance of the project. Quantities shall be recorded in the unit of measure of the industry. Reuse of materials on the site shall be considered a form of recycling. An example of such reuse would be the use of acceptable excavated materials as fill.

1.8.1 Title to Materials

Title to all materials and equipment to be removed, except as indicated or specified otherwise, is vested in the Contractor upon receipt of notice to proceed. The Government will not be responsible for the condition, loss or damage to such property after the Contractor's receipt of notice to proceed. Items indicated to be removed shall be removed and disposed of off island at the Contractor's responsibility and expense before the

completion and final acceptance of the work, and such materials shall not be sold on the site.

1.8.2 Rubbish and Debris

Rubbish and debris shall be removed from Government-controlled property daily unless otherwise directed, so as not to allow accumulation inside or outside the building. Materials that cannot be removed daily shall be stored in areas designated by the Contracting Officer.

1.9 INTERFERENCE WITH GOVERNMENT OPERATIONS

The Contractor shall establish work procedures and methods to prevent interference with existing operations within or adjacent to the construction area. Free passage into adjoining or adjacent buildings not in the contract will not be permitted except as approved by the Contracting Officer. Procedures and methods shall also provide for safe conduct of work and protection of property which is to remain undisturbed.

1.9.1 Coordination

The Contractor shall coordinate all work with the Contracting Officer to minimize interruption and inconvenience to the occupants or to the Government. Scheduling and programming of work will be established during the pre-construction conference.

1.9.2 Utilities and Facilities

All utilities and facilities within the area shall remain operable and shall not be affected by the Contractor's work, unless otherwise approved in writing in advance by the Contracting Officer.

1.9.3 Staking and Flagging Existing Utilities

The Contractor, prior to start of any excavation or trenching work, shall verify the location of all utility lines shown on the drawings which are within the areas of work, and shall mark, stake, or flag each utility line along trench alignments and under areas of excavation under this project, as approved. Utility lines so located shall be noted on the drawings.

1.9.4 Project Site

The Logistic Contractor (RSE) is using the project site to store construction materials. The Logistic Contractor will remove the construction materials from the project site upon receipt of writing notice from the Contractor, via the Contracting Officer. The Contractor shall take into consideration that the Logistic Contractor will take 30 calendar days remove the stored materials from the project site.

1.9.5 Contractor Furnished Transportation for Government Use

Provide one (1/4 ton) 227 kg pickup, one (1/2 ton) 454 kg pickup, and one van for Government use for the duration of contract. Provide fuel, oil, accessories and services as required to keep the vehicles in operating conditions at all times. Contractor furnished transportation shall be at no cost to the Government.

1.10 CONTRACTOR'S OPERATIONS OR STORAGE AREA

At the request of the Contractor, an open operations or storage area will be made available within the installation, the exact location of which will be determined by the Government. The Contractor shall be responsible for the security necessary for protection of his equipment and materials, and shall maintain the area free of debris. No rusty or unsightly materials shall be used for providing the secure measure and such measure shall be erected in a workmanlike manner. Before any construction commences on establishing the operation/storage area, Contractor shall take photographs and/or videos of the site in order to establish the original conditions of the site. A duplicate set shall be made and submitted to the Government for its files. Upon completion and prior to the final acceptance of the contract work, the Contractor shall restore the area to its original condition.

1.11 WORKING DIRECTIVES

Products stored in the existing facilities require seven working days by the Logistics Support Contractor to be transferred into the new Cold Storage Facility. Demolition can begin on the existing facilities following the completion of this transfer.

1.11.1 Working Hours

All work shall be performed between the hours of 0730 to 1600 HST, Monday through Friday. No work shall be accomplished on Saturdays, Sundays, and all federal holidays without written permission from the Contracting Officer. Such written permission shall be available at the job site at all times during construction.

1.12 STAINLESS STEEL TYPE 316

All steel indicated on the drawings and specifications for construction in exterior and non-air conditioned spaces shall be stainless steel, type 316, passivated conforming to ASTM A 240. This requirement shall supercede all requirements noted on other sections in this Project Specifications and shall include but not be limited to sheet metal, fasteners, screens, frames, etc.

1.13 USE OF PRODUCTS CONTAINING RECOVERED MATERIALS

Recovered materials are materials manufactured from waste material and byproducts that have been recycled or diverted from solid waste. The Contractor shall give preference to products containing recovered material when price, performance, and availability meet project requirements. A listing of products, including the recommended recovered material content, is provided by the Environmental Protection Agency at <http://www.epa.gov/cpg/products.htm>. Only those products having recovered material content equal to or greater than EPA guidelines shall be used to meet this requirement.

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION (NOT APPLICABLE)

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SECTION 03300

CAST-IN-PLACE STRUCTURAL CONCRETE

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

ACI INTERNATIONAL (ACI)

ACI 117/117R	(1990; Errata) Standard Tolerances for Concrete Construction and Materials
ACI 211.1	(1991) Standard Practice for Selecting Proportions for Normal, Heavyweight, and Mass Concrete
ACI 214.3R	(1988) Simplified Version of the Recommended Practice for Evaluation of Strength Test Results of Concrete
ACI 301	(1996) Standard Specifications for Structural Concrete
ACI 305R	(1991) Hot Weather Concreting
ACI 318/318R	(1999) Building Code Requirements for Structural Concrete and Commentary

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM C 31/C 31M	(1998) Making and Curing Concrete Test Specimens in the Field
ASTM C 33	(1999a) Concrete Aggregates
ASTM C 39	(1996) Compressive Strength of Cylindrical Concrete Specimens
ASTM C 42	(1999) Obtaining and Testing Drilled Cores and Sawed Beams of Concrete
ASTM C 78	(1994) Flexural Strength of Concrete (Using Simple Beam With Third-Point Loading)
ASTM C 94	(1999) Ready-Mixed Concrete
ASTM C 136	(1996a) Sieve Analysis of Fine and Coarse Aggregates

ASTM C 143	(1998) Slump of Hydraulic Cement Concrete
ASTM C 150	(1998a) Portland Cement
ASTM C 171	(1997a) Sheet Materials for Curing Concrete
ASTM C 172	(1999) Sampling Freshly Mixed Concrete
ASTM C 192/C 192M	(1998) Making and Curing Concrete Test Specimens in the Laboratory
ASTM C 231	(1997e1) Air Content of Freshly Mixed Concrete by the Pressure Method
ASTM C 260	(1998) Air-Entraining Admixtures for Concrete
ASTM C 494	(1999) Chemical Admixtures for Concrete
ASTM C 878	(1995, Rev A) Standard Test Method for Restrained Expansion of Shrinkage - Compressive Concrete
ASTM C 881	(1999) Epoxy-Resin-Base Bonding Systems for Concrete
ASTM C 940	(1998a) Expansion and Bleeding of Freshly Mixed Grouts for Preplaced-Aggregate Concrete in the Laboratory
ASTM C 1017	(1998) Chemical Admixtures for Use in Producing Flowing Concrete
ASTM C 1059	(1999) Latex Agents for Bonding Fresh to Hardened Concrete
ASTM C 1064/C 1064M	(1999) Temperature of Freshly Mixed Portland Cement Concrete
ASTM C 1077	(1998) Laboratories Testing Concrete and Concrete Aggregates for Use in Construction and Criteria for Laboratory Evaluation
ASTM C 1107	(1999) Packaged Dry, Hydraulic-Cement Grout (Nonshrink)
ASTM C 1116	(1995) Fiber-Reinforced Concrete and Shotcrete
ASTM D 75	(1987; R 1997) Sampling Aggregates
ASTM E 96	(1995) Water Vapor Transmission of Materials
ASTM E 1745	(1997) Standard Specification for Plastic Water Vapor Retarders Used in Contract

with Soil or Granular Fill under Concrete
Slabs

CORPS OF ENGINEERS (COE)

COE CRD-C 104	(1980) Method of Calculation of the Fineness Modulus of Aggregate
COE CRD-C 400	(1963) Requirements for Water for Use in Mixing or Curing Concrete
COE CRD-C 521	(1981) Standard Test Method for Frequency and Amplitude of Vibrators for Concrete

NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY (NIST)

NIST HB 44	(1997) NIST Handbook 44: Specifications, Tolerances, and Other Technical Requirements for Weighing and Measuring Devices
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NATIONAL READY-MIXED CONCRETE ASSOCIATION (NRMCA)

NRMCA CPMB 100	(1996) Concrete Plant Standards
NRMCA TMMB 100	(1994) Truck Mixer Agitator and Front Discharge Concrete Carrier Standards
NRMCA QC 3	(1984) Quality Control Manual: Section 3, Plant Certifications Checklist: Certification of Ready Mixed Concrete Production Facilities

1.2 LUMP SUM CONTRACT

Under this type of contract concrete items will be paid for by lump sum and will not be measured. The work covered by these items consists of furnishing all concrete materials, reinforcement, miscellaneous embedded materials, and equipment, and performing all labor for the forming, manufacture, transporting, placing, finishing, curing, and protection of concrete in these structures.

1.3 SUBMITTALS

Government approval is required for submittals with a "GA" designation; submittals having an "FIO" designation are for information only. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-08 Statements

Mixture Proportions; GA.

The results of trial mixture design studies along with a statement giving the maximum nominal coarse aggregate size and the proportions of ingredients that will be used in the manufacture of each strength or class of concrete, at least 14 days prior to commencing concrete placing operations. Aggregate weights shall be based on the saturated surface dry condition. The statement shall be accompanied by test results from an

approved independent commercial testing laboratory, showing that mixture design studies have been made with materials proposed for the project and that the proportions selected will produce concrete of the qualities indicated. No substitutions shall be made in the materials used in the mixture design studies without additional tests to show that the quality of the concrete is satisfactory.

SD-09 Reports

Testing and Inspection for Contractor Quality Control; GA.

Certified copies of laboratory test reports, including mill tests and all other test data, for portland cement, blended cement, pozzolan, ground granulated blast furnace slag, silica fume, aggregate, admixtures, and curing compound proposed for use on this project.

SD-13 Certificates

Qualifications; GA.

Written documentation for Contractor Quality Control personnel.

SD-14 Samples

Surface Retarder; FIO.

Surface retarder material with manufacturer's instructions for application in conjunction with air-water cutting.

1.4 QUALIFICATIONS

Contractor Quality Control personnel assigned to concrete construction shall be American Concrete Institute (ACI) Certified Workmen in one of the following grades or shall have written evidence of having completed similar qualification programs:

- Concrete Field Testing Technician, Grade I
- Concrete Laboratory Testing Technician, Grade I or II
- Concrete Construction Inspector, Level II

- Concrete Transportation Construction Inspector or Reinforced Concrete Special Inspector, Jointly certified by American Concrete Institute (ACI), Building Official and Code Administrators International (BOCA), International Conference of Building Officials (ICBO), and Southern Building Code Congress International (SBCCI).

The foreman or lead journeyman of the flatwork finishing crew shall have similar qualification for ACI Concrete Flatwork Technician/Finisher or equal, with written documentation.

1.5 FIELD TEST FLOOR SLAB

Field test slabs shall be constructed 3 months prior to beginning of work using the materials and procedures proposed for use on the job, to demonstrate the results to be attained. The quality and appearance of the test slab shall be subject to the approval of the Contracting Officer, and, if not judged satisfactory, additional test slabs shall be constructed until approval is attained. Formed or finished surfaces in the completed

structure shall match the quality and appearance of the approved field example.

1.5.1 Test Floor Slab

The test floor slab shall be at least 4 feet by 5 feet and 6 inches thick. A full length expansion joint shall be constructed at the center of the test floor slab. All materials used for the actual expansion joint shall be used in the test floor slab. The concrete used for the test floor slab shall contain all admixtures used for the actual concrete. The test floor slab can be constructed in Honolulu or in Kwajalein and shall be available to the Contracting Officer for inspection.

1.6 SPECIAL REQUIREMENTS

A pre-installation meeting with the Contracting Officer will be required at least 10 days prior to start of construction. The Contractor shall be responsible for calling the meeting; the Project Superintendent and active installation personnel shall be present.

1.7 GENERAL REQUIREMENTS

1.7.1 Tolerances

Except as otherwise specified herein, tolerances for concrete batching, mixture properties, and construction as well as definition of terms and application practices shall be in accordance with ACI 117/117R. Level and grade tolerance measurements of slabs shall be made as soon as possible after finishing; when forms or shoring are used, the measurements shall be made prior to removal.

1.7.1.1 Floors

For the purpose of this Section the following terminology correlation between ACI 117/117R and this Section shall apply:

Floor Profile Quality Classification From ACI 117/117R	This Section
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Conventional Bullfloated	Same
Conventional Straightedged	Same
Flat	Float Finish or Trowel Finish
Very Flat	Same. Use only with F-system

Levelness tolerance shall apply where design requires floors to be sloped to drains or sloped for other reasons.

1.7.1.2 Floors by the Straightedge System

The flatness of the floors shall be carefully controlled and the tolerances shall be measured by the straightedge system as specified in paragraph 4.5.7 of ACI 117/117R, using a 5 foot and adjusted for slopes to drain, straightedge and adjusted for slopes to drain, within 72 hours after floor slab installation and before shores and/or forms are removed. The listed tolerances shall be met at any and every location at which the straightedge can be placed.

Bullfloated 1/2 inches

Straightedged 5/16 inches
 Float Finish 1/4 inches
 Trowel Finish 3/16 inches

1.7.2 Strength Requirements and w/c Ratio

1.7.2.1 Strength Requirements

Specified compressive strength (f'c) shall be as follows:

COMPRESSIVE STRENGTH	STRUCTURE OR PORTION OF STRUCTURE
4000 psi at 28 days	All

Compressive strength shall be determined in accordance with ASTM C 39.

- a. Evaluation of Concrete Compressive Strength. Compressive strength specimens (6 by 12 inch cylinders) shall be fabricated by the Contractor and laboratory cured in accordance with ASTM C 31/C 31M and tested in accordance with ASTM C 39. The strength of the concrete will be considered satisfactory so long as the average of all sets of three consecutive test results equals or exceeds the specified compressive strength f'c and no individual test result falls below the specified strength f'c by more than 500 psi. A "test" is defined as the average of two companion cylinders, or if only one cylinder is tested, the results of the single cylinder test. Additional analysis or testing, including taking cores and/or load tests may be required at the Contractor's expense when the strength of the concrete in the structure is considered potentially deficient.
- b. Investigation of Low-Strength Compressive Test Results. When any strength test of standard-cured test cylinders falls below the specified strength requirement by more than 500 psi or if tests of field-cured cylinders indicate deficiencies in protection and curing, steps shall be taken to assure that the load-carrying capacity of the structure is not jeopardized. When the strength of concrete in place is considered potentially deficient, cores shall be obtained and tested in accordance with ASTM C 42. At least three representative cores shall be taken from each member or area of concrete in place that is considered potentially deficient. The location of cores will be determined by the Contracting Officer to least impair the strength of the structure. Concrete in the area represented by the core testing will be considered adequate if the average strength of the cores is equal to at least 85 percent of the specified strength requirement and if no single core is less than 75 percent of the specified strength requirement. Non-destructive tests (tests other than test cylinders or cores) shall not be used as a basis for acceptance or rejection. The Contractor shall perform the coring and repair the holes. Cores will be tested by the Government.
- c. Load Tests. If the core tests are inconclusive or impractical to obtain or if structural analysis does not confirm the safety of the structure, load tests may be directed by the Contracting Officer in accordance with the requirements of ACI 318/318R. Concrete work evaluated by structural analysis or by results of a load test as being understrength shall be corrected in a manner

satisfactory to the Contracting Officer. All investigations, testing, load tests, and correction of deficiencies shall be performed by and at the expense of the Contractor and must be approved by the Contracting Officer, except that if all concrete is found to be in compliance with the drawings and specifications, the cost of investigations, testing, and load tests will be at the expense of the Government.

1.7.2.2 Water-Cement Ratio

Maximum water-cement ratio (w/c) for normal weight concrete shall be as follows:

WATER-CEMENT RATIO, BY WEIGHT	STRUCTURE OR PORTION OF STRUCTURE
0.45	All

These w/c's may cause higher strengths than that required above for compressive or flexural strength. The maximum w/c required will be the equivalent w/c as determined by conversion from the weight ratio of water to cement plus pozzolan, by the weight equivalency method as described in ACI 211.1.

1.7.3 Air Entrainment

Air Entrainment shall be required.

1.7.4 Slump

Slump of the concrete, as delivered to the point of placement into the forms, shall be within the following limits. Slump shall be determined in accordance with ASTM C 143.

Structural Element	Slump	
	Minimum	Maximum
Foundation walls, substructure walls, footings, slabs	5 in.	6 in.

When use of a plasticizing admixture conforming to ASTM C 1017 or when a Type F or G high range water reducing admixture conforming to ASTM C 494 is permitted to increase the slump of concrete, concrete shall have a slump of 2 to 4 inches before the admixture is added and a maximum slump of 8 inches at the point of delivery after the admixture is added.

All normal weight concrete shall be air entrained to contain between 4 and 7 percent total air, except that when the nominal maximum size coarse aggregate is 3/4 inch or smaller it shall be between 3.5 and 5.5 percent. Concrete with specified strength over 5000 psi may have 1.0 percent less air than specified above. Specified air content for normal weight concrete shall be determined in accordance with ASTM C 231.

1.7.5 Concrete Temperature

The temperature of the concrete as delivered shall not exceed 90 degrees F.

Concrete for the main water tank floor shall be placed at night between the hours of 08:00 pm and 06:00 AM.

1.7.6 Size of Coarse Aggregate

The largest feasible nominal maximum size aggregate (NMSA) specified in paragraph AGGREGATES shall be used in each placement. However, nominal maximum size of aggregate shall not exceed any of the following: three-fourths of the minimum cover for reinforcing bars, three-fourths of the minimum clear spacing between reinforcing bars, one-fifth of the narrowest dimension between sides of forms, or one-third of the thickness of slabs or toppings.

1.7.7 Special Properties and Products

Concrete may contain admixtures other than air entraining agents, such as water reducers, superplasticizers, or set retarding agents to provide special properties to the concrete, if specified or approved. Any of these materials to be used on the project shall be used in the mix design studies. Admixture manufacturer shall provide written document showing compatibility of all materials.

1.7.8 Technical Service for Specialized Concrete

The services of a factory trained technical representative shall be obtained to oversee proportioning, batching, mixing, placing, consolidating, and finishing of concrete with HWWR admixture. A factory trained technical representative shall be present on site for the High-Range Water Reducer (HRWR) admixture. The technical representative shall be on the job full time until the Contracting Officer is satisfied that field controls indicate concrete of specified quality is furnished and that the Contractor's crews are capable of continued satisfactory work. The technical representative shall be available for consultation with, and advice to, Government forces.

1.8 MIXTURE PROPORTIONS

Concrete shall be composed of portland cement, other cementitious and pozzolanic materials as specified, aggregates, water and admixtures as specified.

1.8.1 Proportioning Studies for Normal Weight Concrete

Trial design batches, mixture proportioning studies, and testing requirements for various classes and types of concrete specified shall be the responsibility of the Contractor. Except as specified for flexural strength concrete, mixture proportions shall be based on compressive strength as determined by test specimens fabricated in accordance with ASTM C 192/C 192M and tested in accordance with ASTM C 39. Samples of all materials used in mixture proportioning studies shall be representative of those proposed for use in the project and shall be accompanied by the manufacturer's or producer's test reports indicating compliance with these specifications. Trial mixtures having proportions, consistencies, and air content suitable for the work shall be made based on methodology described in ACI 211.1, using at least three different water-cement ratios for each type of mixture, which will produce a range of strength encompassing those required for each class and type of concrete required on the project. The maximum water-cement ratios required in subparagraph Water-Cement Ratio. Laboratory trial mixtures shall be designed for maximum permitted slump and

air content. Separate sets of trial mixture studies shall be made for each combination of cementitious materials and each combination of admixtures proposed for use. No combination of either shall be used until proven by such studies, except that, if approved in writing and otherwise permitted by these specifications, an accelerator or a retarder may be used without separate trial mixture study. Separate trial mixture studies shall also be made for concrete for any conveying or placing method proposed which requires special properties and for concrete to be placed in unusually difficult placing locations. The temperature of concrete in each trial batch shall be reported. For each water-cement ratio, at least three test cylinders for each test age shall be made and cured in accordance with ASTM C 192/C 192M. They shall be tested at 7 and 28 days in accordance with ASTM C 39. From these test results, a curve shall be plotted showing the relationship between water-cement ratio and strength for each set of trial mix studies. In addition, a curve shall be plotted showing the relationship between 7 day and 28 day strengths. Each mixture shall be designed to promote easy and suitable concrete placement, consolidation and finishing, and to prevent segregation and excessive bleeding.

1.8.2 Average Compressive Strength Required for Mixtures

The mixture proportions selected during mixture design studies shall produce a required average compressive strength (f'_{cr}) exceeding the specified compressive strength (f'_c) by the amount indicated below. This required average compressive strength, f'_{cr} , will not be a required acceptance criteria during concrete production. However, whenever the daily average compressive strength at 28 days drops below f'_{cr} during concrete production, or daily average 7-day strength drops below a strength correlated with the 28-day f'_{cr} , the mixture shall be adjusted, as approved, to bring the daily average back up to f'_{cr} . During production, the required f'_{cr} shall be adjusted, as appropriate, based on the standard deviation being attained on the job.

1.8.2.1 Computations from Test Records

Where a concrete production facility has test records, a standard deviation shall be established in accordance with the applicable provisions of ACI 214.3R. Test records from which a standard deviation is calculated shall represent materials, quality control procedures, and conditions similar to those expected; shall represent concrete produced to meet a specified strength or strengths (f'_c) within 1,000 psi of that specified for proposed work; and shall consist of at least 30 consecutive tests. A strength test shall be the average of the strengths of two cylinders made from the same sample of concrete and tested at 28 days. Required average compressive strength f'_{cr} used as the basis for selection of concrete proportions shall be the larger of the equations that follow using the standard deviation as determined above:

$$f'_{cr} = f'_c + 1.34S \text{ where units are in psi}$$

$$f'_{cr} = f'_c + 2.33S - 500 \text{ where units are in psi}$$

Where S = standard deviation

Where a concrete production facility does not have test records meeting the requirements above but does have a record based on 15 to 29 consecutive tests, a standard deviation shall be established as the product of the calculated standard deviation and a modification factor from the following table:

NUMBER OF TESTS	MODIFICATION FACTOR FOR STANDARD DEVIATION
15	1.16
20	1.08
25	1.03
30 or more	1.00

1.8.2.2 Computations without Previous Test Records

When a concrete production facility does not have sufficient field strength test records for calculation of the standard deviation, the required average strength f'_{cr} shall be determined as follows:

- a. If the specified compressive strength f'_c is less than 3,000 psi,
 $f'_{cr} = f'_c + 1000 \text{ psi}$
- b. If the specified compressive strength f'_c is 3,000 to 5,000 psi,
 $f'_{cr} = f'_c + 1,200 \text{ psi}$
- c. If the specified compressive strength f'_c is over 5,000 psi,
 $f'_{cr} = f'_c + 1,400 \text{ psi}$

1.9 STORAGE OF MATERIALS

Cement and other cementitious materials shall be stored in weathertight buildings, bins, or silos which will exclude moisture and contaminants and keep each material completely separated. Aggregate stockpiles shall be arranged and used in a manner to avoid excessive segregation and to prevent contamination with other materials or with other sizes of aggregates. Aggregate shall not be stored directly on ground unless a sacrificial layer is left undisturbed. Reinforcing bars and accessories shall be stored above the ground on platforms, skids or other supports. Other materials shall be stored in such a manner as to avoid contamination and deterioration. Admixtures which have been in storage at the project site for longer than 6 months or which have been subjected to freezing shall not be used unless retested and proven to meet the specified requirements. Materials shall be capable of being accurately identified after bundles or containers are opened.

1.10 GOVERNMENT ASSURANCE INSPECTION AND TESTING

Day-to day inspection and testing shall be the responsibility of the Contractor Quality Control (CQC) staff. However, representatives of the Contracting Officer can and will inspect construction as considered appropriate and will monitor operations of the Contractor's CQC staff. Government inspection or testing will not relieve the Contractor of any of his CQC responsibilities.

1.10.1 Materials

The Government will sample and test aggregates, cementitious materials, other materials, and concrete to determine compliance with the specifications as considered appropriate. The Contractor shall provide facilities and labor as may be necessary for procurement of representative

test samples. Samples of aggregates will be obtained at the point of batching in accordance with ASTM D 75. Other materials will be sampled from storage at the jobsite or from other locations as considered appropriate. Samples may be placed in storage for later testing when appropriate.

1.10.2 Fresh Concrete

Fresh concrete will be sampled as delivered in accordance with ASTM C 172 and tested in accordance with these specifications, as considered necessary.

1.10.3 Hardened Concrete

Tests on hardened concrete will be performed by the Government when such tests are considered necessary.

1.10.4 Inspection

Concrete operations may be tested and inspected by the Government as the project progresses. Failure to detect defective work or material will not prevent rejection later when a defect is discovered nor will it obligate the Government for final acceptance.

PART 2 PRODUCTS

2.1 CEMENTITIOUS MATERIALS

Cementitious Materials shall be portland cement or portland-pozzolan and shall conform to appropriate specifications listed below.

2.1.1 Portland Cement

ASTM C 150, type II including false set requirements.

2.2 AGGREGATES

Aggregates shall conform to the following.

2.2.1 Fine Aggregate

Fine aggregate shall conform to the quality and gradation requirements of ASTM C 33.

2.2.2 Coarse Aggregate

Coarse aggregate shall conform to ASTM C 33, Class 5S, size designation 67.

2.3 CHEMICAL ADMIXTURES

Chemical admixtures, when required or permitted, shall conform to the appropriate specification listed. Admixtures shall be furnished in liquid form and of suitable concentration for easy, accurate control of dispensing.

2.3.1 Air-Entraining Admixture

Air-Entraining Admixture shall not be used.

2.3.2 Water-Reducing or Retarding Admixture

ASTM C 260 and shall consistently entrain the air content in the specified ranges under field conditions.

2.3.3 High-Range Water Reducer (HRWR)

Eucon 37, Euclid chemical company or approved equal IAW ASTM C 494, Type F or G, except that the 6-month and 1-year strength requirements are waived.

2.3.4 Evaporation Retarder

Eucobar , Euclid Chemical Company, or approved equal.

2.3.5 Delete

2.3.6 Shrinkage Reducing Admixture

Shrinkage Reducing Admixture shall be Eclipse Shrinkage Reducing Admixture, by Grace Construction Products, or approved equal. Approved equal product shall be capable of 25% minimum reduction of ultimate drying shrinkage and shall be NSF approved for potable water tanks. Maximum reduction of specified 28 day concrete compressive strength shall be 15% (600 psi) to 3400 psi. The admixture shall be formulated and applied in accordance with the manufacturer's recommendations.

2.4 CURING MATERIALS

2.4.1 Impervious-Sheet

Impervious-sheet materials shall conform to ASTM C 171, type optional, except, that polyethylene sheet shall not be used.

2.4.2 Membrane-Forming Compound

Membrane-Forming curing compound shall not be used.

2.4.3 Burlap and Cotton Mat

Burlap and cotton mat shall not be used.

2.5 WATER

Water for mixing and curing shall be fresh, clean, potable, and free of injurious amounts of oil, acid, salt, or alkali, except that non-potable water may be used if it meets the requirements of COE CRD-C 400.

2.6 NONSHRINK GROUT

Nonshrink grout shall conform to ASTM C 1107, and shall be a commercial formulation suitable for the proposed application.

2.7 LATEX MODIFIED NONSAG MORTAR

Latex Modified Nonsag Mortar for Vertical Concrete Surface Repairs shall be one of the following materials (or approved equal)

Vertical Supreme, Euclid Chemical Company
Thorite Rapid Vertical, Bonded Manufacturing Company
Polyfast, Dayton Superior Company
Tamms Speed Crete

Approved equal material shall be latex modified nonsag cement based mortar suitable for vertical application without forming, having a 7 day compressive strength of 5000 psi and flexural strength of 650 psi. Surface preparation shall consist of sandblasting, and mechanical scarifying of the entire surface on which material is to be placed.

2.8 LATEX BONDING AGENT

Latex agents for bonding fresh to hardened concrete shall conform to ASTM C 1059.

2.9 EPOXY RESIN

Epoxy resins for use in repairs shall conform to ASTM C 881, Type V. Grade and Class as appropriate for application.

2.10 VAPOR BARRIER

Vapor barrier material shall have the following properties:

Minimum 15-mil thick polyolefin geomembrane
Manufactured with ISO certified virgin resins.
Water Vapor Retarder ASTM E 1745 meets or exceeds Class B requirements with following modification;
Permeance Rating ASTM E 96 not exceeding 0.02 Perms

2.11 JOINT MATERIALS

2.11.1 Joint Fillers, Sealers, and Waterstops

Materials for expansion joints and waterstops shall be in accordance with Section 03150 EXPANSION JOINTS, CONTRACTION JOINTS and joint sealants for expansion joints.

2.12 SYNTHETIC FIBERS FOR REINFORCING

Concrete shall contain synthetic fibers conforming to ASTM C 1116, Type III, Synthetic Fiber 7.5 lbs per cy. Fibers shall be 100 percent virgin polypropylene fibrillated fibers containing no reprocessed olefin materials. Fibers shall have a specific gravity of 0.9, a minimum tensile strength of 70 ksi graded per manufacturer, and specifically manufactured to an optimum gradation for use as concrete secondary reinforcement.

2.13 Evaporative Retarder

Evaporative Retarder shall be sprayed over the fresh concrete surface immediately after bullfloating of the concrete floor slab. The evaporative retarder shall be Eucobar, by Euclid Chemical Company or approved equal. Spray equipment, mixing and application rate, installation shall be per manufacturers instructions. The evaporative retarder shall be used only to prevent rapid evaporation of the concrete slab moisture and shall not be used as a finishing aid.

PART 3 EXECUTION

3.1 PREPARATION FOR PLACING

Before commencing concrete placement, the following shall be performed.

Surfaces to receive concrete shall be clean and free from mastic. Forms shall be in place, cleaned, coated, and adequately supported. Reinforcing steel shall be in place, cleaned, tied, and adequately supported, in accordance with Section 03200 CONCRETE REINFORCEMENT. Transporting and conveying equipment shall be in-place, ready for use, clean, and free of hardened concrete and foreign material. Equipment for consolidating concrete shall be at the placing site and in proper working order. Equipment and material for curing and for protecting concrete from weather or mechanical damage shall be at the placing site, in proper working condition and in sufficient amount for the entire placement. When hot, windy conditions during concreting appear probable, equipment and material shall be at the placing site to provide windbreaks, shading, fogging, or other action to prevent plastic shrinkage cracking or other damaging drying of the concrete.

3.1.1 Foundations

3.1.1.1 Concrete on Earth Foundations

Earth (subgrade, base, or subbase courses) surfaces upon which concrete is to be placed shall be clean, damp, and free from debris, and standing or running water. Prior to placement of concrete, the foundation shall be well drained and shall be satisfactorily graded and uniformly compacted.

3.1.2 Preparation of Previously Placed Concrete

Concrete surfaces to which other concrete is to be bonded shall be abraded in an approved manner that will expose sound aggregate uniformly without damaging the concrete. Laitance and loose particles shall be removed. Apply epoxy bonding agent immediately prior to placing new concrete.

3.2 CONCRETE PRODUCTION

3.2.1 Portable, Batching, Mixing, and Transporting Concrete

All concrete shall be batched after sunset and before sunrise. Concrete shall either be batched and mixed onsite by on-site batch plant and transpoiled accordance with ASTM C 94. Concrete truck mixers shall not be used. Concrete shall be batched and mixed onsite, or close to onsite, and shall conform to the following subparagraphs.

3.2.1.1 General

The batching plant shall be located on site in the general area approved by the Contracting Officer. The batching, mixing and placing system shall have a capacity of 75 cubic yards per hour. A smaller capacity batching plant may be used if certified by the contractor to be capable of a single nighttime monolithic concrete placement. Failure of a single nighttime monolithic concrete placement will result in removal of all deficient concrete and replacement of concrete floor slab. The batching plant shall conform to the requirements of NRMCA CPMB 100 and as specified however, rating plates attached to batch plant equipment are not required.

3.2.1.2 Batching Equipment

The batching controls shall be semiautomatic or automatic, as defined in NRMCA CPMB 100. A semiautomatic batching system shall be provided with interlocks such that the discharge device cannot be actuated until the indicated material is within the applicable tolerance. The batching system

shall be equipped with accurate recorder or recorders that meet the requirements of NRMCA CPMB 100. The weight of water and admixtures shall be recorded if batched by weight. Separate bins or compartments shall be provided for each size group of aggregate and type of cementitious material, to prevent intermingling at any time. Aggregates shall be weighed either in separate weigh batchers with individual scales or, provided the smallest size is batched first, cumulatively in one weigh batcher on one scale. Aggregate shall not be weighed in the same batcher with cementitious material. If both portland cement and other cementitious material are used, they may be batched cumulatively, provided that the portland cement is batched first, except that silica fume shall always be batched separately. Water may be measured by weight or volume. Water shall not be weighed or measured cumulatively with another ingredient. Filling and discharging valves for the water metering or batching system shall be so interlocked that the discharge valve cannot be opened before the filling valve is fully closed. Piping for water and for admixtures shall be free from leaks and shall be properly valved to prevent backflow or siphoning. Admixtures shall be furnished as a liquid of suitable concentration for easy control of dispensing. An adjustable, accurate, mechanical device for measuring and dispensing each admixture shall be provided. Each admixture dispenser shall be interlocked with the batching and discharging operation of the water so that each admixture is separately batched and individually discharged automatically in a manner to obtain uniform distribution throughout the water as it is added to the batch in the specified mixing period. When use of truck mixers makes this requirement impractical, the admixture dispensers shall be interlocked with the sand batchers. Different admixtures shall not be combined prior to introduction in water and shall not be allowed to intermingle until in contact with the cement. Admixture dispensers shall have suitable devices to detect and indicate flow during dispensing or have a means for visual observation. The plant shall be arranged so as to facilitate the inspection of all operations at all times. Suitable facilities shall be provided for obtaining representative samples of aggregates from each bin or compartment, and for sampling and calibrating the dispensing of cementitious material, water, and admixtures. Filling ports for cementitious materials bins or silos shall be clearly marked with a permanent sign stating the contents.

3.2.1.3 Scales

The weighing equipment shall conform to the applicable requirements of CPMB Concrete Plant Standard, and of NIST HB 44, except that the accuracy shall be plus or minus 0.2 percent of scale capacity. The Contractor shall provide standard test weights and any other auxiliary equipment required for checking the operating performance of each scale or other measuring devices. The tests shall be made at the specified frequency in the presence of a Government inspector. The weighing equipment shall be arranged so that the plant operator can conveniently observe all dials or indicators.

3.2.1.4 Portable Batching Tolerances

(A) Tolerances with Weighing Equipment

MATERIAL	PERCENT OF REQUIRED WEIGHT
Cementitious materials	0 to plus 2
Aggregate	plus or minus 2
Water	plus or minus 1
Chemical admixture	0 to plus 6

(B) Tolerances with Volumetric Equipment

For volumetric batching equipment used for water and admixtures, the following tolerances shall apply to the required volume of material being batched:

MATERIAL	PERCENT OF REQUIRED MATERIAL
Water:	plus or minus 1 percent
Chemical admixtures:	0 to plus 6 percent

3.2.1.5 Moisture Control

The plant shall be capable of ready adjustment to compensate for the varying moisture content of the aggregates and to change the weights of the materials being batched.

3.2.1.6 Concrete Mixers

Mixers shall be stationary mixers. Mixers shall be capable of combining the materials into a uniform mixture and of discharging this mixture without segregation. The mixers shall not be charged in excess of the capacity recommended by the manufacturer. The mixers shall be operated at the drum or mixing blade speed designated by the manufacturer. The mixers shall be maintained in satisfactory operating condition, and the mixer drums shall be kept free of hardened concrete. Should any mixer at any time produce unsatisfactory results, its use shall be promptly discontinued until it is repaired.

3.2.1.7 Stationary Mixers

Concrete plant mixers shall be drum-type mixers of tilting, nontilting, horizontal-shaft, or vertical-shaft type, or shall be pug mill type and shall be provided with an acceptable device to lock the discharge mechanism until the required mixing time has elapsed. The mixing time and uniformity shall conform to all the requirements in ASTM C 94 applicable to central-mixed concrete.

3.3 CONCRETE PRODUCTION, SMALL PROJECTS

Batch-type equipment shall be used for producing concrete. Ready-mixed concrete shall be batched, mixed, and transported in accordance with ASTM C 94, except as otherwise specified. Agitators, and nonagitating transporting units shall comply with NRMCA TMMB 100. Ready-mix plant equipment and facilities shall be certified in accordance with NRMCA QC 3. Approved batch tickets shall be furnished for each load of ready-mixed concrete. Site-mixed concrete shall be produced in accordance with ACI 301, and plant shall conform to NRMCA CPMB 100.

3.4 FIBER REINFORCED CONCRETE

Fiber reinforced concrete shall conform to ASTM C 1116 and as follows, using the fibers specified in PART 2. A minimum of 1.5 pounds of fibers per cubic yard of concrete shall be used. Fibers shall be added at the batch plant. Toughness indices shall meet requirements for performance level I of ASTM C 1116. The services of a qualified technical representative shall be provided to instruct the concrete supplier in proper batching and mixing of materials to be provided.

3.5 TRANSPORTING CONCRETE TO PROJECT SITE

Concrete shall be transported to the placing site in agitators, nonagitator transporting equipment conforming to NRMCA TMMB 100 or by approved pumping equipment or conveyors.

3.6 CONVEYING CONCRETE ON SITE

Concrete shall be conveyed from mixer or transporting unit to forms as rapidly as possible and within the time interval specified by methods which will prevent segregation or loss of ingredients using following equipment. Conveying equipment shall be cleaned before each placement.

3.6.1 Buckets

The interior hopper slope shall be not less than 58 degrees from the horizontal, the minimum dimension of the clear gate opening shall be at least 5 times the nominal maximum-size aggregate, and the area of the gate opening shall not be less than 2 square feet. The maximum dimension of the gate opening shall not be greater than twice the minimum dimension. The bucket gates shall be essentially grout tight when closed and may be manually, pneumatically, or hydraulically operated except that buckets larger than 2 cubic yards shall not be manually operated. The design of the bucket shall provide means for positive regulation of the amount and rate of deposit of concrete in each dumping position.

3.6.2 Transfer Hoppers

Concrete may be charged into nonagitator hoppers for transfer to other conveying devices. Transfer hoppers shall be capable of receiving concrete directly from delivery vehicles and shall have conical-shaped discharge features. The transfer hopper shall be equipped with a hydraulically operated gate and with a means of external vibration to effect complete discharge. Concrete shall not be held in nonagitator transfer hoppers more than 30 minutes.

3.6.3 Chutes

When concrete can be placed directly from a truck mixer, agitator, or nonagitator equipment, the chutes normally attached to this equipment by the manufacturer may be used. A discharge deflector shall be used when required by the Contracting Officer. Separate chutes and other similar equipment will not be permitted for conveying concrete.

3.6.4 Belt Conveyors

Belt conveyors shall be designed and operated to assure a uniform flow of concrete from mixer to final place of deposit without segregation of ingredients or loss of mortar and shall be provided with positive means,

such as discharge baffle or hopper , for preventing segregation of the concrete at the transfer points and the point of placing. Belt conveyors shall be constructed such that the idler spacing shall not exceed 36 inches.

The belt speed shall be a minimum of 300 feet per minute and a maximum of 750 feet per minute. If concrete is to be placed through installed horizontal or sloping reinforcing bars, the conveyor shall discharge concrete into a pipe or elephant truck that is long enough to extend through the reinforcing bars.

3.6.5 Concrete Pumps

Concrete may be conveyed by positive displacement pump when approved. The pumping equipment shall be piston or squeeze pressure type; pneumatic placing equipment shall not be used. The pipeline shall be rigid steel pipe or heavy-duty flexible hose. The inside diameter of the pipe shall be at least 3 times the nominal maximum-size coarse aggregate in the concrete mixture to be pumped but not less than 4 inches. Aluminum pipe shall not be used.

3.7 PLACING CONCRETE

Mixed concrete shall be discharged within 1-1/2 hours or before the mixer drum has revolved 300 revolutions, whichever comes first after the introduction of the mixing water to the cement and aggregates. When the concrete temperature exceeds 85 degrees F, the time shall be reduced to 45 minutes. Concrete shall be placed within 15 minutes after it has been discharged from the transporting unit. Concrete shall be handled from mixer or transporting unit to forms in a continuous manner until the approved unit of operation is completed. Adequate scaffolding, ramps and walkways shall be provided so that personnel and equipment are not supported by in-place reinforcement. Placing will not be permitted when the sun, heat, wind, or limitations of facilities furnished by the Contractor prevent proper consolidation, finishing and curing. Sufficient placing capacity shall be provided so that concrete can be kept free of cold joints.

3.7.1 Depositing Concrete

Concrete shall be deposited as close as possible to its final position in the forms, and there shall be no vertical drop greater than 5 feet except where suitable equipment is provided to prevent segregation and where specifically authorized. Depositing of the concrete shall be so regulated that it will be effectively consolidated in horizontal layers not more than 12 inches thick, except that all slabs shall be placed in a single layer. Concrete to receive other construction shall be screeded to the proper level. Concrete shall be deposited continuously in one layer or in layers so that fresh concrete is deposited on in-place concrete that is still plastic. Fresh concrete shall not be deposited on concrete that has hardened sufficiently to cause formation of seams or planes of weakness within the section. Concrete that has surface dried, partially hardened, or contains foreign material shall not be used. When temporary spreaders are used in the forms, the spreaders shall be removed as their service becomes unnecessary. Concrete shall not be placed in slabs over columns and walls until concrete in columns and walls has been in-place at least two hours or until the concrete begins to lose its plasticity. Concrete for beams, girders, brackets, column capitals, haunches, and drop panels shall be placed at the same time as concrete for adjoining slabs.

3.7.2 Consolidation

Immediately after placing, each layer of concrete shall be consolidated by internal vibrators, except for slabs 4 inches thick or less. The vibrators shall at all times be adequate in effectiveness and number to properly consolidate the concrete; a spare vibrator shall be kept at the jobsite during all concrete placing operations. The vibrators shall have a frequency of not less than 10,000 vibrations per minute, an amplitude of at least 0.025 inch, and the head diameter shall be appropriate for the structural member and the concrete mixture being placed. Vibrators shall be inserted vertically at uniform spacing over the area of placement. The distance between insertions shall be approximately 1-1/2 times the radius of action of the vibrator so that the area being vibrated will overlap the adjacent just-vibrated area by a reasonable amount. The vibrator shall penetrate rapidly to the bottom of the layer and at least 6 inches into the preceding layer if there is such. Vibrator shall be held stationary until the concrete is consolidated and then vertically withdrawn slowly while operating. Form vibrators shall not be used unless specifically approved and unless forms are constructed to withstand their use. Vibrators shall not be used to move concrete within the forms. Slabs 4 inches and less in thickness shall be consolidated by properly designed vibrating screeds or other approved technique. Excessive vibration of lightweight concrete resulting in segregation or flotation of coarse aggregate shall be prevented. Frequency and amplitude of vibrators shall be determined in accordance with COE CRD-C 521. Grate tampers ("jitterbugs") shall not be used.

3.7.3 Hot Weather Requirements

Concrete shall be placed at night. When the ambient temperature during concrete placing is expected to exceed 85 degrees F, the concrete shall be placed and finished with procedures previously submitted and as specified herein. The concrete temperature at time of delivery to the forms shall not exceed the temperature shown in the table below when measured in accordance with ASTM C 1064/C 1064M. Cooling of the mixing water or aggregates or placing concrete in the cooler part of the day may be required to obtain an adequate placing temperature. A retarder may be used, as approved, to facilitate placing and finishing. Steel forms and reinforcements shall be cooled as approved prior to concrete placement when steel temperatures are greater than 120 degrees F. Conveying and placing equipment shall be cooled if necessary to maintain proper concrete-placing temperature.

Maximum Allowable Concrete Placing Temperature

Relative Humidity, Percent, During Time of Concrete Placement	Maximum Allowable Concrete Temperature Degrees
Greater than 60	90 F
40-60	85 F
Less than 40	80 F

3.7.4 Prevention of Plastic Shrinkage Cracking

During hot weather with low humidity, and particularly with appreciable wind, the Contractor shall be alert to the tendency for plastic shrinkage cracks to develop and shall institute measures to prevent this. Particular care shall be taken if plastic shrinkage cracking is potentially imminent

and especially if it has developed during a previous placement. Periods of high potential for plastic shrinkage cracking can be anticipated by use of Fig. 2.1.5 of ACI 305R. In addition the concrete placement shall be further protected by erecting shades and windbreaks and by applying fog sprays of water, sprinkling, ponding or wet covering. Plastic shrinkage cracks that occur shall be filled by injection of epoxy resin as directed, after the concrete hardens. Plastic shrinkage cracks shall never be troweled over or filled with slurry.

3.8 JOINTS

Joints shall be located and constructed only as indicated or approved.

3.8.1 Construction Joints

Construction joints are not permitted.

3.8.2 Contraction Joints in Slabs on Grade

There are no contraction joints for the tank slab.

3.8.3 Expansion Joints

Installation of expansion joints and sealing of these joints shall conform to the requirements of Section 03150 EXPANSION JOINTS.

3.8.4 Dowels and Tie Bars

Dowels and tie bars shall be installed at the locations shown on the drawings and to the details shown, using materials and procedures specified in Section 03200 CONCRETE REINFORCEMENT and herein. Conventional smooth "paving" dowels shall be installed in slabs using approved methods to hold the dowel in place during concreting within a maximum alignment tolerance of 1/8 inch in 12 inches. "Structural" type deformed bar dowels, or tie bars, shall be installed to meet the specified tolerances. Care shall be taken during placing adjacent to and around dowels and tie bars to ensure there is no displacement of the dowel or tie bar and that the concrete completely embeds the dowel or tie bar and is thoroughly consolidated.

3.9 FINISHING FORMED SURFACES

Finishing of formed surfaces shall be as specified herein. Unless another type of architectural or special finish is specified, surfaces shall be left with the texture imparted by the forms except that defective surfaces shall be repaired. Unless painting of surfaces is required, uniform color of the concrete shall be maintained by use of only one mixture without changes in materials or proportions for any structure or portion of structure that requires a Class A or B finish. Except for major defects, as defined hereinafter, surface defects shall be repaired as specified herein within 24 hours after forms are removed. Repairs of the so-called "plaster-type" will not be permitted in any location. Tolerances of formed surfaces shall conform to the requirements of ACI 117/117R. These tolerances apply to the finished concrete surface, not to the forms themselves; forms shall be set true to line and grade. Form tie holes requiring repair and other defects whose depth is at least as great as their surface diameter shall be repaired as specified in paragraph Damp-Pack Mortar Repair. Defects whose surface diameter is greater than their depth shall be repaired as specified in paragraph Repair of Major Defects. Repairs shall be finished flush with adjacent surfaces and with

the same surface texture. The cement used for all repairs shall be a blend of job cement with white cement proportioned so that the final color after curing and aging will be the same as the adjacent concrete. Concrete with excessive honeycomb, or other defects which affect the strength of the member, will be rejected. Repairs shall be demonstrated to be acceptable and free from cracks or loose or drummy areas at the completion of the contract and, for Class A and B Finishes, shall be inconspicuous. Repairs not meeting these requirements will be rejected and shall be replaced.

3.9.1 Class B Finish

Class B finish is required to all formed concrete surfaces. Fins, ravelings, and loose material shall be removed, all surface defects over 1/2 inch in diameter or more than 1/2 inch deep, shall be repaired and, except as otherwise indicated. Defects more than 1/2 inch in diameter shall be cut back to sound concrete, but in all cases at least 1 inch deep.

The Contractor shall prepare a sample panel for approval (as specified in PART 1) before commencing repair, showing that the surface texture and color match will be attained.

3.9.2 Smooth Finish

After other concrete construction is complete in each overall separate contiguous area of the structure, smooth finish shall be applied to the areas indicated on the drawings. A mortar mix consisting of one part portland cement and two parts well-graded sand passing a No. 30 sieve, with water added to give the consistency of thick paint, shall be used. Where the finished surface will not receive other applied surface, white cement shall be used to replace part of the job cement to produce an approved color, which shall be uniform throughout the surfaces of the structure. After the surface has been thoroughly wetted and allowed to approach surface dryness, the mortar shall be vigorously applied to the area by clean burlap pads or by cork or wood-floating, to completely fill all surface voids. Excess grout shall be scraped off with a trowel. As soon as it can be accomplished without pulling the mortar from the voids, the area shall be rubbed with burlap pads having on their surface the same sand-cement mix specified above but without any mixing water, until all of the visible grout film is removed. The burlap pads used for this operation shall be stretched tightly around a board to prevent dishing the mortar in the voids. The finish of any area shall be completed in the same day, and the limits of a finished area shall be made at natural breaks in the surface. The surface shall be continuously moist cured for 48 hours commencing immediately after finishing operations in each area. The temperature of the air adjacent to the surface shall be not less than 50 degrees F for 24 hours prior to, and 48 hours after, the application. In hot, dry weather the smooth finish shall be applied in shaded areas or at night, and shall never be applied when there is significant hot, dry wind.

3.10 REPAIRS

3.10.1 Damp-Pack Mortar Repair

Form tie holes requiring repair and other defects whose depth is at least as great as their surface diameter but not over 4 inches shall be repaired by the damp-pack mortar method. Form tie holes shall be reamed and other similar defects shall be cut out to sound concrete. The void shall then be thoroughly cleaned, thoroughly wetted, brush-coated with a thin coat of neat cement grout and filled with mortar. Mortar shall be a stiff mix of 1 part portland cement to 2 parts fine aggregate passing the No. 16 mesh

sieve, and minimum amount of water. Only sufficient water shall be used to produce a mortar which, when used, will stick together on being molded into a ball by a slight pressure of the hands and will not exude water but will leave the hands damp. Mortar shall be mixed and allowed to stand for 30 to 45 minutes before use with remixing performed immediately prior to use. Mortar shall be thoroughly tamped in place in thin layers using a hammer and hardwood block. Holes passing entirely through walls shall be completely filled from the inside face by forcing mortar through to the outside face. All holes shall be packed full. Damp-pack repairs shall be moist cured for at least 48 hours.

3.10.2 Repair of Major Defects

Major defects will be considered to be those more than 1/2 inch deep or, for Class A and B finishes, more than 1/2 inch in diameter and, for Class C and D finishes, more than 2 inches in diameter. Also included are any defects of any kind whose depth is over 4 inches or whose surface diameter is greater than their depth. Major defects shall be repaired as specified below.

3.10.2.1 Surface Application of Mortar Repair

Defective concrete shall be removed, and removal shall extend into completely sound concrete. Approved equipment and procedures which will not cause cracking or microcracking of the sound concrete shall be used. If reinforcement is encountered, concrete shall be removed so as to expose the reinforcement for at least 2 inches on all sides. All such defective areas greater than 12 square inches shall be outlined by saw cuts at least 1 inch deep. Defective areas less than 12 square inches shall be outlined by a 1 inch deep cut with a core drill in lieu of sawing. All saw cuts shall be straight lines in a rectangular pattern in line with the formwork panels. After concrete removal, the surface shall be thoroughly cleaned by high pressure washing to remove all loose material. Surfaces shall be kept continually saturated for the first 12 of the 24 hours immediately before placing mortar and shall be damp but not wet at the time of commencing mortar placement. The Contractor, at his option, may use either hand-placed mortar or mortar placed with a mortar gun. If hand-placed mortar is used, the edges of the cut shall be perpendicular to the surface of the concrete. The prepared area shall be brush-coated with a thin coat of neat cement grout. The repair shall then be made using a stiff mortar, preshrunk by allowing the mixed mortar to stand for 30 to 45 minutes and then remixed, thoroughly tamped into place in thin layers. If hand-placed mortar is used, the Contractor shall test each repair area for drumminess by firm tapping with a hammer and shall inspect for cracks, both in the presence of the Contracting Officer's representative, immediately before completion of the contract, and shall replace any showing drumminess or cracking. If mortar placed with a mortar gun is used, the gun shall be a small compressed air-operated gun to which the mortar is slowly hand fed and which applies the mortar to the surface as a high-pressure stream, as approved. Repairs made using shotcrete equipment will not be accepted. The mortar used shall be the same mortar as specified for damp-pack mortar repair. If gun-placed mortar is used, the edges of the cut shall be beveled toward the center at a slope of 1:1. All surface applied mortar repairs shall be continuously moist cured for at least 7 days. Moist curing shall consist of several layers of saturated burlap applied to the surface immediately after placement is complete and covered with polyethylene sheeting, all held closely in place by a sheet of plywood or similar material rigidly braced against it. Burlap shall be kept continually wet.

3.10.2.2 Repair of Deep and Large Defects

Deep and large defects will be those that are more than 6 inches deep and also have an average diameter at the surface more than 18 inches or that are otherwise so identified by the Project Office. Such defects shall be repaired as specified herein or directed, except that defects which affect the strength of the structure shall not be repaired and that portion of the structure shall be completely removed and replaced. Deep and large defects shall be repaired by procedures approved in advance including forming and placing special concrete using applied pressure during hardening. Preparation of the repair area shall be as specified for surface application of mortar. In addition, the top edge (surface) of the repair area shall be sloped at approximately 20 degrees from the horizontal, upward toward the side from which concrete will be placed. The special concrete shall be a concrete mixture with low water content and low slump, and shall be allowed to age 30 to 60 minutes before use. Concrete containing a specified expanding admixture may be used in lieu of the above mixture; the paste portion of such concrete mixture shall be designed to have an expansion between 2.0 and 4.0 percent when tested in accordance with ASTM C 940. A full width "chimney" shall be provided at the top of the form on the placing side to ensure filling to the top of the opening. A pressure cap shall be used on the concrete in the chimney with simultaneous tightening and revibrating the form during hardening to ensure a tight fit for the repair. The form shall be removed after 24 hours and immediately the chimney shall be carefully chipped away to avoid breaking concrete out of the repair; the surface of the repair concrete shall be dressed as required.

3.11 FINISHING UNFORMED SURFACES

The finish of all unformed surfaces shall meet the requirements of paragraph Tolerances in PART 1, when tested as specified herein.

3.11.1 General

In hot weather all requirements of paragraphs Hot Weather Requirements and Prevention of Plastic Shrinkage Cracking shall be met. Unformed surfaces that are not to be covered by additional concrete or backfill shall have a float finish, with additional finishing as specified below, and shall be true to the elevation shown on the drawings. Surfaces to receive additional concrete or backfill shall be brought to the elevation shown on the drawings, properly consolidated, and left true and regular. Unless otherwise shown on the drawings, exterior surfaces shall be sloped for drainage, as directed. Where drains are provided, interior floors shall be evenly sloped to the drains. Joints shall be carefully made with a jointing or edging tool. The finished surfaces shall be protected from stains or abrasions. Grate tampers or "jitterbugs" shall not be used for any surfaces. The dusting of surfaces with dry cement or other materials or the addition of any water during finishing shall not be permitted. If bleedwater is present prior to finishing, the excess water shall be carefully dragged off or removed by absorption with porous materials such as burlap. During finishing operations, extreme care shall be taken to prevent over finishing or working water into the surface; this can cause "crazing" (surface shrinkage cracks which appear after hardening) of the surface. Any slabs with surfaces which exhibit significant crazing shall be removed and replaced. During finishing operations, surfaces shall be checked with a 10 foot straightedge, applied in both directions at regular intervals while the concrete is still plastic, to detect high or low areas.

3.11.2 Rough Slab Finish

As a first finishing operation for unformed surfaces and as final finish for slabs to receive mortar setting beds, the surface shall receive a rough slab finish prepared as follows. The concrete shall be uniformly placed across the slab area, consolidated as previously specified, and then screeded with straightedge strikeoffs immediately after consolidation to bring the surface to the required finish level with no coarse aggregate visible. Side forms and screed rails shall be provided, rigidly supported, and set to exact line and grade. Allowable tolerances for finished surfaces apply only to the hardened concrete, not to forms or screed rails.

Forms and screed rails shall be set true to line and grade. "Wet screeds" shall not be used.

3.11.3 Floated Finish

Slabs to receive more than a rough slab finish shall next be given a wood float finish. The screeding shall be followed immediately by darbying or bull floating before bleeding water is present, to bring the surface to a true, even plane. Then, after the concrete has stiffened so that it will withstand a man's weight without imprint of more than 1/4 inch and the water sheen has disappeared, it shall be floated to a true and even plane free of ridges. Floating shall be performed by use of suitable hand floats or power driven equipment. Sufficient pressure shall be used on the floats to bring a film of moisture to the surface. Hand floats shall be made of wood, magnesium, or aluminum. Lightweight concrete or concrete that exhibits stickiness shall be floated with a magnesium float. Care shall be taken to prevent over-finishing or incorporating water into the surface.

3.11.4 Troweled Finish

All tank floor slabs shall be given a trowel finish. After floating is complete and after the surface moisture has disappeared, unformed surfaces shall be steel-troweled to a smooth, even, dense finish, free from blemishes including trowel marks. In lieu of hand finishing, an approved power finishing machine may be used in accordance with the directions of the machine manufacturer. Additional trowelings shall be performed, either by hand or machine until the surface has been troweled 4 times, with waiting period between each. Care shall be taken to prevent blistering and if such occurs, troweling shall immediately be stopped and operations and surfaces corrected. A final hard steel troweling shall be done by hand, with the trowel tipped, and using hard pressure, when the surface is at a point that the trowel will produce a ringing sound. The finished surface shall be thoroughly consolidated and shall be essentially free of trowel marks and be uniform in texture and appearance. The concrete mixture used for troweled finished areas shall be adjusted, if necessary, in order to provide sufficient fines (cementitious material and fine sand) to finish properly.

3.12 CURING AND PROTECTION

3.12.1 General

Concrete shall be cured by total immersion of water 60 days after concrete finishing.

3.12.2 Immersion Curing

Concrete slab for sump pit area slab shall be used with impetuous sheeting and continuous mist spraying. The main concrete slab shall be cured by continuous immersed with 1 inches to 2 inches of potable water immediately after finishing the concrete slab for a period of 60 days.

3.13 SETTING BASE PLATES AND BEARING PLATES

3.13.1 Nonshrink Grout

Nonshrink grout shall be a ready-mixed material requiring only the addition of water. Water content shall be the minimum that will provide a flowable mixture and completely fill the space to be grouted without segregation, bleeding, or reduction of strength.

3.13.1.1 Mixing and Placing of Nonshrink Grout

Mixing and placing shall be in conformance with the material manufacturer's instructions and as specified therein. Ingredients shall be thoroughly dry-mixed before adding water. After adding water, the batch shall be mixed for 3 minutes. Batches shall be of size to allow continuous placement of freshly mixed grout. Grout not used within 30 minutes after mixing shall be discarded. The space between the top of the concrete or machinery-bearing surface and the plate shall be filled solid with the grout. Forms shall be of wood or other equally suitable material for completely retaining the grout on all sides and on top and shall be removed after the grout has set. The placed grout shall be carefully worked by rodding or other means to eliminate voids; however, overworking and breakdown of the initial set shall be avoided. Grout shall not be retempered or subjected to vibration from any source. Where clearances are unusually small, placement shall be under pressure with a grout pump. Temperature of the grout, and of surfaces receiving the grout, shall be maintained at 65 to 85 degrees F until after setting.

3.13.1.2 Treatment of Exposed Surfaces

For metal-oxidizing nonshrink grout, exposed surfaces shall be cut back 1 inch and immediately covered with a parge coat of mortar consisting of 1 part portland cement and 2-1/2 parts fine aggregate by weight, with sufficient water to make a plastic mixture. The parge coat shall have a smooth finish. For other mortars or grouts, exposed surfaces shall have a smooth-dense finish and be left untreated. Curing shall comply with paragraph CURING AND PROTECTION.

3.14 TESTING AND INSPECTION FOR CONTRACTOR QUALITY CONTROL

The Contractor shall perform the inspection and tests described below and, based upon the results of these inspections and tests, shall take the action required and shall submit specified reports. When, in the opinion of the Contracting Officer, the concreting operation is out of control, concrete placement shall cease and the operation shall be corrected. The laboratory performing the tests shall be onsite and shall conform with ASTM C 1077. Materials may be subjected to check testing by the Government from samples obtained at the manufacturer, at transfer points, or at the project site. The Government will inspect the laboratory, equipment, and test procedures prior to start of concreting operations for conformance with ASTM C 1077.

3.14.1 Grading and Corrective Action

3.14.1.1 Fine Aggregate

At least once during each shift when the concrete plant is operating, there shall be one sieve analysis and fineness modulus determination in accordance with ASTM C 136 and COE CRD-C 104 for the fine aggregate or for each fine aggregate if it is batched in more than one size or classification. The location at which samples are taken may be selected by the Contractor as the most advantageous for control. However, the Contractor is responsible for delivering fine aggregate to the mixer within specification limits. When the amount passing on any sieve is outside the specification limits, the fine aggregate shall be immediately resampled and retested. If there is another failure on any sieve, the fact shall immediately reported to the Contracting Officer, concreting shall be stopped, and immediate steps taken to correct the grading.

3.14.1.2 Coarse Aggregate

At least once during each shift in which the concrete plant is operating, there shall be a sieve analysis in accordance with ASTM C 136 for each size of coarse aggregate. The location at which samples are taken may be selected by the Contractor as the most advantageous for production control.

However, the Contractor shall be responsible for delivering the aggregate to the mixer within specification limits. A test record of samples of aggregate taken at the same locations shall show the results of the current test as well as the average results of the five most recent tests including the current test. The Contractor may adopt limits for control coarser than the specification limits for samples taken other than as delivered to the mixer to allow for degradation during handling. When the amount passing any sieve is outside the specification limits, the coarse aggregate shall be immediately resampled and retested. If the second sample fails on any sieve, that fact shall be reported to the Contracting Officer. Where two consecutive averages of 5 tests are outside specification limits, the operation shall be considered out of control and shall be reported to the Contracting Officer. Concreting shall be stopped and immediate steps shall be taken to correct the grading.

3.14.2 Quality of Aggregates

Thirty days prior to the start of concrete placement, the Contractor shall perform all tests for aggregate quality required by ASTM C 33. In addition, after the start of concrete placement, the Contractor shall perform tests for aggregate quality at least every three months, and when the source of aggregate or aggregate quality changes. Samples tested after the start of concrete placement shall be taken immediately prior to entering the concrete mixer.

3.14.3 Scales, Batching and Recording

The accuracy of the scales shall be checked by test weights prior to start of concrete operations and at least once every three months. Such tests shall also be made as directed whenever there are variations in properties of the fresh concrete that could result from batching errors. Once a week the accuracy of each batching and recording device shall be checked during a weighing operation by noting and recording the required weight, recorded weight, and the actual weight batched. At the same time, the Contractor shall test and ensure that the devices for dispensing admixtures are operating properly and accurately. When either the weighing accuracy or batching accuracy does not comply with specification requirements, the plant shall not be operated until necessary adjustments or repairs have

been made. Discrepancies in recording accuracies shall be corrected immediately.

3.14.4 Batch-Plant Control

The measurement of concrete materials including cementitious materials, each size of aggregate, water, and admixtures shall be continuously controlled. The aggregate weights and amount of added water shall be adjusted as necessary to compensate for free moisture in the aggregates. The amount of air-entraining agent shall be adjusted to control air content within specified limits. A report shall be prepared indicating type and source of cement used, type and source of pozzolan or slag used, amount and source of admixtures used, aggregate source, the required aggregate and water weights per cubic yard, amount of water as free moisture in each size of aggregate, and the batch aggregate and water weights per cubic yard for each class of concrete batched during each day's plant operation.

3.14.5 Concrete Mixture

- a. Air Content Testing. Air content tests shall be made when test specimens are fabricated. In addition, at least two tests for air content shall be made on randomly selected batches of each separate concrete mixture produced during each 8-hour period of concrete production. Additional tests shall be made when excessive variation in workability is reported by the placing foreman or Government inspector. Tests shall be made in accordance with ASTM C 878. Test results shall be plotted on control charts which shall at all times be readily available to the Government and shall be submitted weekly. Copies of the current control charts shall be kept in the field by testing crews and results plotted as tests are made. When a single test result reaches either the upper or lower action limit, a second test shall immediately be made. The results of the two tests shall be averaged and this average used as the air content of the batch to plot on both the air content and the control chart for range, and for determining need for any remedial action. The result of each test, or average as noted in the previous sentence, shall be plotted on a separate control chart for each mixture on which an "average line" is set at the midpoint of the specified air content range from paragraph Air Entrainment. An upper warning limit and a lower warning limit line shall be set 1.0 percentage point above and below the average line, respectively. An upper action limit and a lower action limit line shall be set 1.5 percentage points above and below the average line, respectively. The range between each two consecutive tests shall be plotted on a secondary control chart for range where an upper warning limit is set at 2.0 percentage points and an upper action limit is set at 3.0 percentage points. Samples for air content may be taken at the mixer, however, the Contractor is responsible for delivering the concrete to the placement site at the stipulated air content. If the Contractor's materials or transportation methods cause air content loss between the mixer and the placement, correlation samples shall be taken at the placement site as required by the Contracting Officer, and the air content at the mixer controlled as directed.
- b. Air Content Corrective Action. Whenever points on the control chart for percent air reach either warning limit, an adjustment shall immediately be made in the amount of air-entraining

admixture batched. As soon as practical after each adjustment, another test shall be made to verify the result of the adjustment.

Whenever a point on the secondary control chart for range reaches the warning limit, the admixture dispenser shall be recalibrated to ensure that it is operating accurately and with good reproducibility. Whenever a point on either control chart reaches an action limit line, the air content shall be considered out of control and the concreting operation shall immediately be halted until the air content is under control. Additional air content tests shall be made when concreting is restarted.

- c. Slump Testing. In addition to slump tests which shall be made when test specimens are fabricated, at least four slump tests shall be made on randomly selected batches in accordance with ASTM C 143 for each separate concrete mixture produced during each 8-hour or less period of concrete production each day. Also, additional tests shall be made when excessive variation in workability is reported by the placing foreman or Government inspector. Test results shall be plotted on control charts which shall at all times be readily available to the Government and shall be submitted weekly. Copies of the current control charts shall be kept in the field by testing crews and results plotted as tests are made. When a single slump test reaches or goes beyond either the upper or lower action limit, a second test shall immediately be made. The results of the two tests shall be averaged and this average used as the slump of the batch to plot on both the control charts for slump and the chart for range, and for determining need for any remedial action. Limits shall be set on separate control charts for slump for each type of mixture. The upper warning limit shall be set at 1/2 inch below the maximum allowable slump specified in paragraph Slump in PART 1 for each type of concrete and an upper action limit line and lower action limit line shall be set at the maximum and minimum allowable slumps, respectively, as specified in the same paragraph. The range between each consecutive slump test for each type of mixture shall be plotted on a single control chart for range on which an upper action limit is set at 2 inches. Samples for slump shall be taken at the mixer. However, the Contractor is responsible for delivering the concrete to the placement site at the stipulated slump. If the Contractor's materials or transportation methods cause slump loss between the mixer and the placement, correlation samples shall be taken at the placement site as required by the Contracting Officer, and the slump at the mixer controlled as directed.
- d. Slump Corrective Action. Whenever points on the control charts for slump reach the upper warning limit, an adjustment shall immediately be made in the batch weights of water and fine aggregate. The adjustments are to be made so that the total water content does not exceed that amount allowed by the maximum w/c ratio specified, based on aggregates which are in a saturated surface dry condition. When a single slump reaches the upper or lower action limit, no further concrete shall be delivered to the placing site until proper adjustments have been made. Immediately after each adjustment, another test shall be made to verify the correctness of the adjustment. Whenever two consecutive individual slump tests, made during a period when there was no adjustment of batch weights, produce a point on the control chart for range at or above the upper action limit, the concreting

operation shall immediately be halted, and the Contractor shall take appropriate steps to bring the slump under control. Additional slump tests shall be made as directed.

- e. Temperature. The temperature of the concrete shall be measured when compressive strength specimens are fabricated. Measurement shall be in accordance with ASTM C 1064/C 1064M. The temperature shall be reported along with the compressive strength data.
- f. Strength Specimens. At least one set of test specimens shall be made, for compressive or flexural strength as appropriate, on each different concrete mixture placed during the day for each 500 cubic yards or portion thereof of that concrete mixture placed each day. Additional sets of test specimens shall be made, as directed by the Contracting Officer, when the mixture proportions are changed or when low strengths have been detected. A truly random (not haphazard) sampling plan shall be developed by the Contractor and approved by the Contracting Officer prior to the start of construction. The plan shall assure that sampling is done in a completely random and unbiased manner. A set of test specimens for concrete with a 28-day specified strength per paragraph Strength Requirements in PART 1 shall consist of four specimens, two to be tested at 7 days and two at 28 days. Test specimens shall be molded and cured in accordance with ASTM C 31/C 31M and tested in accordance with ASTM C 39 for test cylinders and ASTM C 78 for test beams. Results of all strength tests shall be reported immediately to the Contracting Officer. Quality control charts shall be kept for individual strength "tests", ("test" as defined in paragraph Strength Requirements in PART 1) moving average of last 3 "tests" for strength, and moving average for range for the last 3 "tests" for each mixture. The charts shall be similar to those found in ACI 214.3R.

3.14.6 Inspection Before Placing

Foundations, construction joints, forms, and embedded items shall be inspected by the Contractor in sufficient time prior to each concrete placement in order to certify to the Contracting Officer that they are ready to receive concrete. The results of each inspection shall be reported in writing.

3.14.7 Placing

The placing foreman shall supervise placing operations, shall determine that the correct quality of concrete or grout is placed in each location as specified and as directed by the Contracting Officer, and shall be responsible for measuring and recording concrete temperatures and ambient temperature hourly during placing operations, weather conditions, time of placement, volume placed, and method of placement. The placing foreman shall not permit batching and placing to begin until it has been verified that an adequate number of vibrators in working order and with competent operators are available. Placing shall not be continued if any pile of concrete is inadequately consolidated. If any batch of concrete fails to meet the temperature requirements, immediate steps shall be taken to improve temperature controls.

3.14.8 Vibrators

The frequency and amplitude of each vibrator shall be determined in

accordance with COE CRD-C 521 prior to initial use and at least once a month when concrete is being placed. Additional tests shall be made as directed when a vibrator does not appear to be adequately consolidating the concrete. The frequency shall be determined while the vibrator is operating in concrete with the tachometer being held against the upper end of the vibrator head while almost submerged and just before the vibrator is withdrawn from the concrete. The amplitude shall be determined with the head vibrating in air. Two measurements shall be taken, one near the tip and another near the upper end of the vibrator head, and these results averaged. The make, model, type, and size of the vibrator and frequency and amplitude results shall be reported in writing. Any vibrator not meeting the requirements of paragraph Consolidation, shall be immediately removed from service and repaired or replaced.

3.14.9 Curing Inspection

- a. Moist Curing Inspections. At least once each shift, and not less than twice per day on both work and non-work days, an inspection shall be made of all areas subject to moist curing. The surface moisture condition shall be noted and recorded.
- b. Moist Curing Corrective Action. When a daily inspection report lists an area of inadequate curing, immediate corrective action shall be taken, and the required curing period for those areas shall be extended by 1 day.
- c. Membrane Curing Inspection. No curing compound shall be applied until the Contractor has verified that the compound is properly mixed and ready for spraying. At the end of each operation, the Contractor shall estimate the quantity of compound used by measurement of the container and the area of concrete surface covered, shall compute the rate of coverage in square feet per gallon, and shall note whether or not coverage is uniform.
- d. Membrane Curing Corrective Action. When the coverage rate of the curing compound is less than that specified or when the coverage is not uniform, the entire surface shall be sprayed again.
- e. Sheet Curing Inspection. At least once each shift and once per day on non-work days, an inspection shall be made of all areas being cured using impervious sheets. The condition of the covering and the tightness of the laps and tapes shall be noted and recorded.
- f. Sheet Curing Corrective Action. When a daily inspection report lists any tears, holes, or laps or joints that are not completely closed, the tears and holes shall promptly be repaired or the sheets replaced, the joints closed, and the required curing period for those areas shall be extended by 1 day.

3.14.10 Mixer Uniformity

- a. Stationary Mixers. Prior to the start of concrete placing and once every 6 months when concrete is being placed, or once for every 75,000 cubic yards of concrete placed, whichever results in the shortest time interval, uniformity of concrete mixing shall be determined in accordance with ASTM C 94.
- b. Truck Mixers. Prior to the start of concrete placing and at least

once every 6 months when concrete is being placed, uniformity of concrete mixing shall be determined in accordance with ASTM C 94. The truck mixers shall be selected randomly for testing. When satisfactory performance is found in one truck mixer, the performance of mixers of substantially the same design and condition of the blades may be regarded as satisfactory.

- c. Mixer Uniformity Corrective Action. When a mixer fails to meet mixer uniformity requirements, either the mixing time shall be increased, batching sequence changed, batch size reduced, or adjustments shall be made to the mixer until compliance is achieved.

3.14.11 Reports

All results of tests or inspections conducted shall be reported informally as they are completed and in writing daily. A weekly report shall be prepared for the updating of control charts covering the entire period from the start of the construction season through the current week. During periods of cold-weather protection, reports of pertinent temperatures shall be made daily. These requirements do not relieve the Contractor of the obligation to report certain failures immediately as required in preceding paragraphs. Such reports of failures and the action taken shall be confirmed in writing in the routine reports. The Contracting Officer has the right to examine all contractor quality control records.

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			SD-07 Certificates														
			Qualifications	1.5	FIO												
		03410	SD-02 Shop Drawings														
			Precast/Prestressed Units	1.3	G AE												
			SD-03 Product Data														
			Precast/Prestressed Units	1.3	G AE												

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		03410	SD-06 Test Reports														
			Tests	2.2	G AE												
		03411	SD-02 Shop Drawings														
			Drawings of precast members	1.7.1	G AE												
			SD-03 Product Data														
			inserts	2.2.7.1	FIO												
			Bearing pads	2.2.8	FIO												
			SD-05 Design Data														
			design calculations	1.7.2	G AE												
			Concrete mix design	1.7.3	FIO												
			SD-06 Test Reports														
			Contractor-furnished mix design	2.1	FIO												
			SD-07 Certificates														
			Fabrication	2.3	FIO												
			SD-11 Closeout Submittals														
			batch ticket	1.7.4	FIO												
		03415	SD-02 Shop Drawings														
			Erection	3.10	G AE												
			SD-03 Product Data														
			Erection Plan	3.10.5	G AE												
			Design Calculations	1.3.1.3	G AE												
			Concrete Mixture Proportions	2.2	G AE												
			Construction Records	3.11	FIO												
			SD-04 Samples														
			Precast Panel	1.4	G AE												
			SD-06 Test Reports														

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		03415	Materials	2.1	G AE												
			Concrete	1.3.2.2	G AE												
			SD-07 Certificates														
			Cement	2.1.1	G AE												
			Air-Entraining Admixture	2.1.3.2	G AE												
			Water-Reducing Admixture	2.1.3.2	G AE												
			Accelerating Admixture		G AE												
			Aggregates	2.1.3.1	G AE												
			Air Content	1.3.2.3	FIO												
		04200	SD-02 Shop Drawings														
			Masonry Work		G RE												
			SD-04 Samples														
			Concrete Masonry Units (CMU)	2.4	G ED												
			Anchors, Ties, and Bar Positioners	2.12	G ED												
			Expansion-Joint Materials	2.16	G ED												
			Joint Reinforcement	2.13	G ED												
			SD-06 Test Reports														
			Field Testing of Mortar	3.26.1	G RE												
			Field Testing of Grout	3.26.2	G RE												
			Masonry Cement	2.10	G RE												
			SD-07 Certificates														
			Concrete Masonry Units (CMU)	2.4	G RE												
			Anchors, Ties, and Bar Positioners	2.12	G RE												
			Joint Reinforcement	2.13	G RE												

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		04200	Reinforcing Steel Bars and Rods	2.14	G RE												
			Masonry Cement	2.10	G RE												
			Mortar Admixtures	2.10.1	G RE												
			Grout Admixtures	2.11.1	G RE												
		05090	SD-03 Product Data														
			Welding Procedure Qualifications	1.5	G RE												
			Welder, Welding Operator, and Tacker Qualification	1.6	G RE												
			Inspector Qualification	1.7	G RE												
			Previous Qualifications	1.5.1	G RE												
			Prequalified Procedures	1.5.2	G RE												
			SD-06 Test Reports														
			Quality Control	3.2	G RE												
		05120	SD-02 Shop Drawings														
			Structural Connections	3.2.1	G RE												
			SD-03 Product Data														
			Welding	3.3	G RE												
			SD-04 Samples														
			Carbon Steel Bolts and Nuts	2.6	FIO												
			Nuts Dimensional Style	2.7	FIO												
			Washers	2.8	FIO												
			SD-07 Certificates														
			Mill Test Reports		G RE												
			Welder Qualifications		G RE												
			Welding Inspector	1.5	G RE												
		05400	SD-02 Shop Drawings														

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		05400	Framing Components	2.1	FIO												
			SD-07 Certificates														
			Mill Certificates		FIO												
			Welds	3.2.1	FIO												
		05500	SD-02 Shop Drawings														
			Steel Pipe Bollards	3.1.1	FIO												
			Canopy Framing	3.1.2	FIO												
			Refrigerant Rack Frames	3.1.3	FIO												
			Stainless Steel Fixed Ladder	3.1.4	FIO												
			Stainless Steel Pipe Bicycle Racks	3.1.5	FIO												
			Stainless Steel Mechanical Enclosure Gate	3.1.6	FIO												
			Handhole Concrete Cover	3.1.7	FIO												
			Checker Plate at Door D-35	3.1.8	FIO												
		06100	SD-07 Certificates														
			Grading and Marking	2.1.1	FIO												
		06200	SD-02 Shop Drawings														
			Finish Carpentry	2.1	FIO												
			SD-03 Product Data														
			Laminated Plastic	2.1.6	FIO												
			SD-04 Samples														
			Laminated Plastic	2.1.6	FIO												
		06600	SD-02 Shop Drawings														
			FRP Shapes and Gratings	2.1.1	FIO												
			SD-03 Product Data														

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		06600	FRP Shapes and Gratings	2.1.1	FIO												
			SD-07 Certificates														
			FRP Shapes and Gratings	2.1.1	FIO												
		07132	SD-03 Product Data														
			Reinforcing Fabric	3.2.2	FIO												
			Protection Board	3.5.2	FIO												
			Applications	2.1.2	FIO												
			SD-07 Certificates														
			Materials	1.4	FIO												
		07212	SD-03 Product Data														
			Sound Attenuation Batt Insulation	2.1.1	FIO												
			Accessories	2.2	FIO												
			SD-08 Manufacturer's Instructions														
			Sound Attenuation Batt Insulation	2.1.1	FIO												
		07220	SD-03 Product Data														
			Application of Insulation	3.7	FIO												
			Inspection	3.8	FIO												
			SD-07 Certificates														
			Insulation	2.2	FIO												
		07225	SD-02 Shop Drawings														
			Refrigerated Floor Insulation	1.2.1	FIO												
			SD-03 Product Data														
			Refrigerated Floor Insulation	1.2.1	FIO												
			SD-04 Samples														
			Insulation	2.1.1	FIO												
			Vapor Barrier	2.2.2	FIO												

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		07225	DELETE	2.2.2	FIO												
		07240	SD-02 Shop Drawings														
			Drawings	2.3.1	FIO												
			Drawings	3.7.1	FIO												
			SD-03 Product Data														
			Exterior Insulation and Finish System	1.3	FIO												
			Exterior Insulation and Finish System	1.3	FIO												
			Water Vapor Transmission Analysis	1.5	FIO												
			SD-04 Samples														
			Exterior Insulation and Finish System	1.3	FIO												
			SD-06 Test Reports														
			Exterior Insulation and Finish System	1.3	FIO												
			SD-07 Certificates														
			Qualifications	1.6.1	FIO												
			Qualifications	1.6.1	FIO												
			Third Party Inspection	3.9.1	FIO												
			Installer	3.2	FIO												
			Warranty	1.9	FIO												
			Insulation Board	2.3	FIO												
			Quality Control	3.9.2	FIO												

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		07240	SD-10 Operation and Maintenance Data														
			Exterior Insulation and Finish System	1.3	FIO												
		07416	SD-02 Shop Drawings														
			Structural Standing Seam Metal Roof System	1.5.2	FIO												
			SD-03 Product Data														
			Design Analysis		FIO												
			Qualifications		FIO												
			SD-04 Samples														
			Accessories	2.3	FIO												
			Roof Panels	2.1	FIO												
			Factory Color Finish	2.6	FIO												
			Fasteners	2.4	FIO												
			Gaskets and Insulating Compounds	2.10	FIO												
			Sealant	2.9	FIO												
			Concealed Anchor Clips	2.2	FIO												
			SD-06 Test Reports														
			Test Report for Uplift Resistance of the SSSMR	1.5.1	FIO												
			SD-07 Certificates														
			Structural Standing Seam Metal Roof System	1.5.2	FIO												
		07510	SD-03 Product Data														

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		07510	Inspection	3.19	FIO												
			SD-07 Certificates														
			Bitumen	2.2	FIO												
			Felt	2.5	FIO												
			Cants	2.4	FIO												
		07600	SD-02 Shop Drawings														
			Materials	2.1	FIO												
		07840	SD-02 Shop Drawings														
			Firestopping Materials	2.1	FIO												
			SD-07 Certificates														
			Firestopping Materials	2.1	FIO												
			Installer Qualifications	1.5	FIO												
			Inspection	3.3	FIO												
		07900	SD-03 Product Data														
			Backing	2.1	FIO												
			Bond-Breaker	2.2	FIO												
			Sealant	2.5	FIO												
			SD-07 Certificates														
			Sealant	2.5	FIO												
		08210	SD-02 Shop Drawings														
			Fire Doors	3.1.2	FIO												
			Wood Doors and Frames	1.3.1	FIO												
			SD-07 Certificates														
			Fire Doors	3.1.2	FIO												
			Adhesives	2.1.3	FIO												
		08250	SD-02 Shop Drawings														

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		08250	FRP Doors and Frames	2.1	FIO												
			SD-03 Product Data														
			FRP Doors and Frames	2.1	FIO												
			SD-07 Certificates														
			FRP Doors and Frames	2.1	FIO												
		08560	SD-02 Shop Drawings														
			Vinyl Windows	2.1	FIO												
			Insect Screens	2.6	FIO												
			SD-03 Product Data														
			Vinyl Windows	2.1	FIO												
			Insect Screens	2.6	FIO												
			Installation	3.1	FIO												
			Cleaning	3.3	FIO												
			SD-04 Samples														
			Finish	2.5	FIO												
			SD-07 Certificates														
			Vinyl Windows	2.1	FIO												
			Insect Screens	2.6	FIO												
		08700	SD-03 Product Data														
			Hardware Schedule	1.3	FIO												
			Keying	2.7	G RE												
			Keying System	1.2.1	G RE												
			SD-07 Certificates														
			Hardware and Accessories	1.2.1	FIO												
		08810	SD-02 Shop Drawings														
			Installation	3.2	FIO												

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		08810	SD-03 Product Data														
			Glazing Accessories	2.11	FIO												
		09250	SD-02 Shop Drawings														
			Steel Framing	2.6.2	FIO												
			Steel Framing	3.1	FIO												
			SD-07 Certificates														
			Gypsum Wallboard	2.5.1	FIO												
			Gypsum Wallboard	3.8	FIO												
			Steel Framing	2.6.2	FIO												
			Steel Framing	3.1	FIO												
			Cementitious Backer Units	2.7	FIO												
		09310	SD-03 Product Data														
			Tile	2.1	FIO												
			Tile	2.1	FIO												
			Mortar and Grout	2.4	FIO												
			Mortar and Grout	2.4	FIO												
			SD-04 Samples														
			Tile	2.1	FIO												
			Marble Thresholds	2.5	FIO												
			SD-07 Certificates														
			Tile	2.1	FIO												
			Mortar and Grout	2.4	FIO												
		09510	SD-02 Shop Drawings														
			Approved Detail Drawings	1.3	FIO												
			SD-03 Product Data														
			Acoustical Ceiling Systems	1.2.1	FIO												

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		09510	SD-04 Samples														
			Acoustical Units	2.1	FIO												
			SD-06 Test Reports														
			Ceiling Attenuation Class and Test	2.8	FIO												
			SD-07 Certificates														
			Acoustical Units	2.1	FIO												
		09650	SD-03 Product Data														
			Resilient Flooring and Accessories	1.3.1	FIO												
			SD-04 Samples														
			Flooring	3.2	FIO												
			SD-06 Test Reports														
			Moisture Test	3.3	FIO												
		09900	SD-03 Product Data														
			Paint	2.1	FIO												
			Mixing and Thinning	3.3	FIO												
			Application	3.4	FIO												
			SD-04 Samples														
			Moisture-Curing Polyurethane	1.5	FIO												
			Paint	2.1	FIO												
			SD-06 Test Reports														
			Paint	2.1	FIO												
			SD-07 Certificates														
			Lead	2.1.3	FIO												
			Mildewcide and Insecticide	2.1.2	FIO												

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		09900	Volatile Organic Compound (VOC) Content	2.1.5	FIO												
		10161	SD-02 Shop Drawings														
			Shower Partition System	1.3	FIO												
			Shower Partition System	2.4	FIO												
			SD-03 Product Data														
			Shower Partition System	1.3	FIO												
			Shower Partition System	2.4	FIO												
			SD-04 Samples														
			Shower Partition System	1.3	FIO												
			Shower Partition System	2.4	FIO												
		10201	SD-02 Shop Drawings														
			Metal Wall Louvers	2.1	FIO												
			Metal Wall Louvers	3.1	FIO												
			SD-03 Product Data														
			Metal Wall Louvers	2.1	FIO												
			Metal Wall Louvers	3.1	FIO												
		10440	SD-03 Product Data														
			Installation	3.1	FIO												
			SD-04 Samples														
			Interior Signage	1.3	FIO												
		10505	SD-02 Shop Drawings														
			Solid plastic lockers	2.1	FIO												
			SD-03 Product Data														
			Solid plastic lockers	2.1	FIO												
		10800	SD-03 Product Data														

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		10800	Finishes	2.1.2	FIO												
			Accessory Items	2.2	FIO												
			SD-04 Samples														
			Finishes	2.1.2	FIO												
			Accessory Items	2.2	FIO												
		11551	SD-02 Shop Drawings														
			Pallet Storage Racks	1.3.1	FIO												
			Seismic Protection	1.3.1.2	FIO												
			Aisle Signs and Labels	2.3	FIO												
			SD-03 Product Data														
			Pallet Storage Racks	1.3.1	FIO												
			SD-07 Certificates														
			Pallet Storage Racks Certification	1.2.1	FIO												
		12490	SD-02 Shop Drawings														
			Approved Detail Drawings	3.2	FIO												
			SD-03 Product Data														
			Window Treatments	3.2	FIO												
			Hardware	1.3	FIO												
			SD-04 Samples														
			Window Treatments	3.2	FIO												
		13038	SD-02 Shop Drawings														
			Cold storage rooms	2.1	FIO												
			SD-03 Product Data														
			Cold storage rooms	2.1	FIO												
			SD-08 Manufacturer's Instructions														
			Cold storage rooms	2.1	FIO												

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		13038	SD-10 Operation and Maintenance Data														
			Cold storage rooms	2.1	G ED												
		13040	SD-02 Shop Drawings														
			Hydronic Floor Warming System		FIO												
			SD-03 Product Data														
			Spare Parts	1.4.1	FIO												
			SD-06 Test Reports														
			Test Reports	1.4.2	FIO												
			SD-08 Manufacturer's Instructions														
			Hydronic Floor Warming System		FIO												
			SD-10 Operation and Maintenance Data														
			Hydronic Floor Warming System		G ED												
		13080	SD-02 Shop Drawings														
			Bracing	3.1	FIO												
			Resilient Vibration Isolation Devices	3.4	FIO												
			Equipment Requirements	1.2.1	FIO												
			SD-03 Product Data														
			Bracing	3.1	FIO												
			Equipment Requirements	1.2.1	FIO												
		13280	SD-03 Product Data														
			Respiratory Protection Program	1.12	G RE												
			Cleanup and Disposal	3.11	G RE												
			Detailed Drawings	3.6.5.2	G RE												

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		13280	Detailed Drawings	3.9.4	G RE												
			Materials and Equipment		G RE												
			Qualifications	1.5	G RE												
			Training Program	1.11	G RE												
			Medical Requirements	1.10	G RE												
			Encapsulants	2.1	G RE												
			SD-06 Test Reports														
			Exposure Assessment and Air Monitoring	3.9	G RE												
			Local Exhaust Ventilation	1.20	G RE												
			Licenses, Permits and Notifications	1.14	G RE												
			SD-07 Certificates														
			Vacuum, Filtration and Ventilation Equipment		G RE												
		13281	SD-03 Product Data														
			Materials and Equipment	1.18	G RE												
			Expendable Supplies	1.19	G RE												
			Qualifications	1.5	G RE												
			SD-06 Test Reports														
			Licences, Permits, and Notifications	1.11	G RE												
			Accident Prevention Plan (APP)	1.7	G RE												
			Sampling and Analysis	1.13	G RE												
			Clearance Report	3.8	G RE												
		13286	SD-07 Certificates														

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		13286	Qualifications of CIH	1.8.1	G												
			Training Certification	1.8.1	G												
			PCB and Mercury-Containing Lamp Removal Work Plan	1.8.2	G												
			PCB and Mercury-Containing Lamp Disposal Plan	1.8.3	G												
			SD-11 Closeout Submittals														
			Transporter certification	3.5.2	G												
			Certification of Decontamination	3.2.4	G												
			Certificate of Disposal and/or recycling	3.5.2.1	FIO												
		13851	SD-02 Shop Drawings														
			Fire Alarm Reporting System	1.4.1	G RE												
			SD-03 Product Data														
			Storage Batteries	2.2	G RE												
			Special Tools and Spare Parts	2.7.4	FIO												
			Technical Data and Computer Software	1.4	G RE												
			Training	3.6	FIO												
			Testing	3.5	FIO												
			Voltage Drop	1.2.1	G RE												
			SD-06 Test Reports														
			Testing	3.5	FIO												
			SD-07 Certificates														
			Equipment	1.3.1	FIO												
			Equipment	1.3.6	FIO												

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		13851	Qualifications	1.3.7	G RE												
			SD-10 Operation and Maintenance Data														
			Technical Data and Computer Software	1.4	G RE												
		13930	SD-02 Shop Drawings														
			Sprinkler System Shop Drawings		G RE												
			As-Built Shop Drawings		FIO												
			SD-03 Product Data														
			Fire Protection Related Submittals	3.1	FIO												
			Fire Protection Related Submittals	3.1	FIO												
			Load Calculations for Sizing Sway Bracing	1.6.1	G RE												
			Components and Equipment Data		G RE												
			Hydraulic Calculations	1.7	G RE												
			Spare Parts	1.6.1	FIO												
			Preliminary Tests Procedures	1.6.1	G RE												
			Final Acceptance Test Procedures	1.6.1	G RE												
			On-site Training Schedule	1.6.1	G RE												
			Preliminary Tests	3.10	G RE												
			Final Acceptance Test	3.11	G RE												
			Fire Protection Specialist	1.8	G RE												
			Qualifications														
			Sprinkler System Installer	1.9	G RE												
			Qualifications														
			SD-06 Test Reports														

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		13930	Preliminary Tests Report	1.6.2	G RE												
			Final Acceptance Test Report	1.6.2	G RE												
			SD-07 Certificates														
			Fire Protection Specialist	3.3	G RE												
			Inspection														
			SD-10 Operation and Maintenance														
			Data														
			Wet Pipe Sprinkler System	1.2	FIO												
		15070	SD-02 Shop Drawings														
			Contractor Designed Bracing	1.2.4	G ED												
			SD-03 Product Data														
			Coupling and Bracing	3.1	FIO												
			Equipment Requirements	1.3	FIO												
			Contractor Designed Bracing	1.2.4	G RE												
			SD-07 Certificates														
			Flexible Ball Joints	2.2	FIO												
		15080	SD-04 Samples														
			Thermal Insulation Materials	1.4.1	FIO												
		15400	SD-02 Shop Drawings														
			Plumbing System	3.9.1	FIO												
			Electrical Schematics	1.5.1	FIO												
			SD-03 Product Data														
			Plumbing Fixture Schedule	3.10	FIO												
			Vibration-Absorbing Features		FIO												
			Plumbing System	3.9.1	FIO												
			SD-06 Test Reports														

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		15400	Tests, Flushing and Disinfection	3.9	FIO												
			SD-07 Certificates														
			Materials and Equipment	1.5.2	FIO												
			Bolts	1.5.2	FIO												
			SD-10 Operation and Maintenance														
			Data														
			Plumbing System	3.9.1	FIO												
		15652	SD-02 Shop Drawings														
			Refrigeration System	2.10	G ED												
			Drawings	1.5.2	FIO												
			Drawings	3.1.9	FIO												
			SD-03 Product Data														
			Refrigeration System	2.10	FIO												
			Framed Instructions	3.1.23	FIO												
			Qualifications		FIO												
			Verification of Dimensions	1.5.1	FIO												
			Tests	1.2.1	G ED												
			Tests	3.2	FIO												
			Demonstrations	3.4	G ED												
			Spare Parts Data	1.2.1	FIO												
			SD-07 Certificates														
			Refrigeration System	2.10	FIO												
			Service Organizations	1.2.2	FIO												
		15653	SD-02 Shop Drawings														
			Drawings	1.5.2	G ED												
			SD-03 Product Data														

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		15653	Framed Instructions	3.1.19	FIO												
			Qualifications	1.2.1	FIO												
			Verification of Dimensions	1.5.1	FIO												
			Tests	3.2	FIO												
			Demonstrations	3.5	G RE												
			Air-Conditioning	1.2.1	FIO												
			Spare Parts Data	1.2.2	FIO												
			SD-06 Test Reports														
			Tests	3.2	FIO												
			System Performance Test		G RE												
			Inspections		FIO												
			SD-07 Certificates														
			Air-Conditioning System	1.2.1	FIO												
			Service Organizations	1.2.1	FIO												
			SD-10 Operation and Maintenance														
			Data														
			Operation	2.3	FIO												
			Operation	3.5	FIO												
			Maintenance Manuals	3.5	FIO												
		15895	SD-02 Shop Drawings														
			Drawings	1.4.1	FIO												
			Installation	3.1	FIO												
			SD-03 Product Data														
			Components and Equipment	2.1	FIO												
			Test Procedures		FIO												
			System Diagrams		G ED												

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		15895	Similar Services		FIO												
			Testing, Adjusting and Balancing	3.6	FIO												
			Field Training	3.8	FIO												
			SD-06 Test Reports														
			Performance Tests	3.7	FIO												
			SD-07 Certificates														
			Bolts		FIO												
			SD-10 Operation and Maintenance														
			Data														
			Operating and Maintenance	3.8	FIO												
			Instructions														
		15951	SD-02 Shop Drawings														
			HVAC and Refrigeraton Control	3.1.1	FIO												
			System														
			SD-03 Product Data														
			Service Organizations		FIO												
			Equipment Compliance Booklet	1.6	FIO												
			Commissioning Procedures	3.4	FIO												
			Performance Verification Test	1.6	FIO												
			Procedures														
			Training	3.6	FIO												
			SD-06 Test Reports														
			Commissioning Report	3.6.2	FIO												
			Performance Verification Test	3.5.3	FIO												
			SD-10 Operation and Maintenance														
			Data														

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		15951	Operation Manual	1.5	FIO												
			Maintenance and Repair Manual	1.6	G ED												
		15990	SD-02 Shop Drawings														
			TAB Schematic Drawings and Report Forms	3.3	FIO												
			SD-03 Product Data														
			TAB Related HVAC Submittals	3.2	FIO												
			TAB Procedures	3.5.1	G ED												
			Calibration	1.4	FIO												
			Systems Readiness Check	3.5.2	FIO												
			TAB Execution	3.5.1	G ED												
			TAB Verification	3.5.4	G ED												
			SD-06 Test Reports														
			Design Review Report	3.1	G ED												
			Systems Readiness Check	3.5.2	G ED												
			TAB Report	3.5.3	G ED												
			TAB Verification Report	3.5.4	G ED												
			SD-07 Certificates														
			Ductwork Leak Testing	3.4	FIO												
			TAB Firm	1.5.1	G ED												
			TAB Specialist	1.5.2	G ED												
		15995	SD-03 Product Data														
			Commissioning Team	3.1	FIO												
			Test Procedures		FIO												
			Test Schedule		G ED												
			SD-06 Test Reports														

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		15995	Test Reports		G ED												
		16360	SD-02 Shop Drawings														
			Unit Substation Drawings	1.5.1.1	G RE												
			SD-03 Product Data														
			Secondary Unit Substation	2.3	G RE												
			SD-06 Test Reports														
			Ground resistance test reports	1.5.2	G RE												
			acceptance checks and tests	3.5.1	G RE												
			SD-07 Certificates														
			Transformer losses	1.5.3	G RE												
			SD-09 Manufacturer's Field														
			Reports														
			Switchgear design and production	2.6.3	G RE												
			tests														
			design tests (dry-type)	2.6.7	G RE												
			routine and other tests (dry-type)	2.6.8	G RE												
			SD-10 Operation and Maintenance														
			Data														
			Unit substations	1.7.1	G RE												
			Transformer (dry-type)	2.3.4	G RE												
			SD-11 Closeout Submittals														
			Equipment test schedule	2.6.1	G RE												
		16375	SD-02 Shop Drawings														
			Electrical Distribution System	3.11.3	G RE												
			As-Built Drawings		G RE												
			SD-03 Product Data														

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		16375	Fault Current Analysis		G RE												
			Protective Device		G RE												
			Nameplates	2.2	FIO												
			Material and Equipment	2.1	FIO												
			General Installation Requirements	3.1	FIO												
			SD-06 Test Reports														
			Factory Tests	2.17	FIO												
			Field Testing	3.11	FIO												
			Cable Installation	3.2.1.4	FIO												
			SD-07 Certificates														
			Material and Equipment	2.1	FIO												
			Cable Joints	3.3	FIO												
			Cable Installer Qualifications	1.3.1	FIO												
			SD-10 Operation and Maintenance														
			Data														
			Electrical Distribution System	3.11.3	FIO												
		16415	SD-02 Shop Drawings														
			Emergency Power Supply (EPS)	2.20	G RE												
			Interior Electrical Equipment	1.3.1	G RE												
			SD-03 Product Data														
			Manufacturer's Catalog	1.3.2	FIO												
			Material, Equipment, and Fixture	1.3.3	FIO												
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			Installation Procedures	1.3.4	FIO												
			As-Built Drawings	1.2.6	FIO												
			As-Built Drawings	1.3.5	FIO												

SUBMITTAL REGISTER

CONTRACT NO.
(Am-0010)

TITLE AND LOCATION COLD STORAGE FACILITY, KWAJALEIN ATOLL, MARSHALL ISLANDS						CONTRACTOR											
ACTIVITY NO	TRANSMITTAL NO	SPEC SECT	DESCRIPTION ITEM SUBMITTED	PARAGRAPH	GOVT CLASSIFICATION OR REVIEW NUMBER	CONTRACTOR: SCHEDULE DATES			CONTRACTOR ACTION		DATE FWD TO APPR AUTH/	APPROVING AUTHORITY				MAILED TO CONTR/ DATE RCD FRM APPR AUTH	REMARKS
						SUBMIT	APPROVAL NEEDED BY	MATERIAL NEEDED BY	ACTION CODE	DATE OF ACTION	DATE RCD FROM CONTR	DATE FWD TO OTHER REVIEWER	DATE RCD FROM OTH REVIEWER	ACTION CODE	DATE OF ACTION		
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)	(q)	(r)
		16415	Onsite Tests	1.3.6	G RE												
			SD-06 Test Reports														
			Factory Test Reports	1.3.7	G RE												
			Field Test Plan	1.3.8	G RE												
			Field Test Reports	1.3.9	G RE												
			Field Test Reports	3.22	G RE												
			SD-07 Certificates														
			Materials and Equipment	1.4	FIO												
		16528	SD-02 Shop Drawings														
			Lighting System	1.3.1	G RE												
			Detail Drawings	1.2.1	G RE												
			As-Built Drawings	1.2.1	FIO												
			SD-03 Product Data														
			Equipment and Materials	1.3.9	FIO												
			SD-06 Test Reports														
			Operating Test	3.16.2	G RE												
			SD-10 Operation and Maintenance														
			Data														
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			Record Keeping and	1.8	G RE												
			Documentation														
			Manufacturer's Recommendations	3.1.2	G RE												

CONTRACT NO.
(Am-0010)

CONTRACTOR

[illegible]

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SECTION 07225

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SECTION 07225

REFRIGERATED FLOOR INSULATION

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM C 552	(1991) Cellular Glass Block and Pipe Thermal Insulation
ASTM C 728	(1991) Perlite Thermal Insulation Board
ASTM C 984	(1984) Perlite Board and Rigid Cellular Polyurethane Composite Roof Insulation
ASTM C 1050	(1991) Rigid Cellular Polystyrene - Cellulosic Fiber Composite Roof Insulation
ASTM C 1289	(1995) Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board
ASTM E 84	(1995; Rev. B) Surface Burning Characteristics of Building Materials

1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-02 Shop Drawings

Refrigerated Floor Insulation

1.2.1 Refrigerated Floor Insulation

Show complete description of the procedures for the installation of the insulation system indicating the type of materials, thicknesses, identity codes, sequence of laying insulation, special methods for cutting and fitting of insulation, and special precautions. Manufacturer's drawings based on field measurements may be submitted to supplement the information shown on the shop drawings. Indicate details and location of hydronic underfloor warming system in relation to floor insulation.

SD-03 Product Data

Refrigerated Floor Insulation

Submit manufacturer's catalog data for insulation, adhesive and vapor barrier membrane.

SD-04 Samples

Insulation

Vapor Barrier Membrane

D E L E T E

Samples shall be of sufficient size to show color ranges, and types, as applicable, of the material proposed to be used.

1.3 DELIVERY AND STORAGE

1.3.1 Delivery

Deliver materials to the site in original sealed containers or packages bearing manufacturer's name and brand designation. Where materials are covered by a referenced specification, containers or packages shall bear specification number, type, and class as applicable. Deliver materials in sufficient quantity to allow continuity of work.

1.3.2 Storage and Handling

Protect materials from damage during construction period. Bundle insulation board by manufacturer's identity codes. Replace damaged material with new material. Protect roll materials against moisture absorption. Store roll materials on end on clean raised platforms in dry locations with adequate ventilation. Do not store roll materials in buildings under construction until concrete and mortar work is finished and dry. Tie covering securely to the pallets in such a way as to be completely weathertight and yet provide sufficient ventilation to prevent condensation.

PART 2 PRODUCTS

2.1 MATERIALS

Conform to the respective specifications and standards and to requirements specified herein and materials shall not contain asbestos.

2.1.1 Insulation Types

Insulation using chlorofluorocarbon (CFC) to impart thermal resistance shall not be used.

- a. Expanded Perlite Board: ASTM C 728. Minimum 19 mm thick when both top and bottom surfaces will be in contact with adhesive.
- b. Polyisocyanurate Board: ASTM C 1289, Type I, foiled faced both sides or Type II, fibrous felt or glass mat membrane both sides,

except minimum compressive strength shall be 138 kPa.

- c. Composite Board: ASTM C 1289, Type III, perlite insulation board faced one side, fibrous felt or glass fiber mat membrane on other side, Type V, oriented strand board or waferboard on one side and fibrous felt or glass mat membrane or aluminum foil on the other; ASTM C 984, Polyisocyanurate-perlite; or ASTM C 1050, Polystyrene-wood fiberboard, Type III, Grade 1, Class A.
- d. Cellular Glass Block Insulation: ASTM C 552.
- e. Insulation Thickness: As necessary to provide a thermal resistance (RSI value) of 5.28 or more. Thickness shall be based on the "RSI" value for aged insulation.

2.1.2 Adhesive

Adhesive for insulation shall be a product listed in the UL Building Materials Directory or the FM Approval Guide for the type of floor insulation used in this project.

2.1.3 D E L E T E

DELETE

2.2.3 Vapor Barrier

Vapor barrier shall be polyethylene sheet, 6 mils thick each layer. Water vapor permeance of vapor barrier at 38 degrees C and 100% relative humidity shall not exceed 0.0000 grams per 645 square millimeter per 24 hours in a flat condition. Vapor barrier shall have a maximum flame spread coefficient of 15, fuel contribution of zero, and smoke development of 5, maximum when tested in accordance with ASTM E 84.

2.1.4 Sealant Tape

Manufactured from same material as the vapor barrier with special pressure sensitive adhesive. Tape shall provide the same strength and vapor permeance as the vapor barrier material.

PART 3 EXECUTION

3.1 CONDITION OF SURFACES

Ensure that the surfaces are rigid, dry, smooth, and free from cracks and holes before application of vapor barrier. Keep insulating materials dry before, during, and after installation. Coordinate the work with that of the hydronic underfloor warming system and other trades to assure that components which are to be secured or attached are installed.

3.2 INSTALLATION

3.2.1 Vapor Barrier

Provide beneath the entire concrete floor slab and floor insulation as indicated. **Return vapor barrier up the sides of insulation breaks and seal to the insulation panel walls. At door openings, return vapor barrier up the exterior side of the insulation breaks and secure.** Use the greatest

widths and lengths practicable so as to eliminate joints wherever possible.

Where joints are necessary, lap not less than 6 inches and seal with approved adhesive. **Joints shall be staggered at each layer.** Torn, punctured, or damaged vapor barrier material shall be removed and replaced as directed, prior to the placing of concrete or floor insulation. Place concrete and floor insulation in such a manner as to preclude damage to the vapor barrier material.

3.2.2 Insulation Installation

Lay insulation over vapor barrier so that end joints of each course break with those of adjoining courses. When using multiple layers of insulation, joints of each succeeding layer shall be parallel and broken in both directions with respect to the layer below. All joints on the top surfaces shall be taped. Embed 150 mm wide glass fiber tape in adhesive to cover the joint extending 75 mm beyond each side of joints.

3.2.3 Adhesive Installation

Insulation shall be adhesive applied in accordance with the adhesive manufacturer's printed installation instructions.

3.3 PROTECTION OF APPLIED INSULATION

Storing, walking, wheeling, or trucking will not be permitted directly on insulation. Board or plank walkways, runways, and platforms shall be provided as necessary, to distribute weight.

3.4 CLEAN UP

Each day remove from the job site debris, scraps, containers, and other rubbish and trash resulting from the installation of the vapor barrier membrane and floor insulation.

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SECTION 15653

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SECTION 15653

AIR-CONDITIONING SYSTEM (UNITARY TYPE)

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

AIR CONDITIONING AND REFRIGERATION INSTITUTE (ARI)

- | | |
|-------------|---|
| ARI 340/360 | (1993) Commercial and Industrial Unitary Air-Conditioning and Heat Pump Equipment |
| ARI 495 | (1999) Refrigerant Liquid Receivers |
| ARI 700 | (1995; Apx C) Specifications for Fluorocarbon and Other Refrigerants |

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

- | | |
|-------------|---|
| ASTM A 307 | (1997) Carbon Steel Bolts and Studs, 60 000 PSI Tensile Strength |
| ASTM C 534 | (1999) Preformed Flexible Elastomeric Cellular Thermal Insulation in Sheet and Tubular Form |
| ASTM C 1071 | (1998) Thermal and Acoustical Insulation (Glass Fiber, Duct Lining Material) |
| ASTM E 437 | (1997) Industrial Wire Cloth and Screens (Square Opening Series) |
| ASTM F 104 | (1995) Nonmetallic Gasket Materials |

AMERICAN SOCIETY OF HEATING, REFRIGERATING AND AIR-CONDITIONING ENGINEERS (ASHRAE)

- | | |
|-------------|--|
| ASHRAE 15 | (1994) Safety Code for Mechanical Refrigeration |
| ASHRAE 34 | (1997) Number Designation and Safety Classification of Refrigerants |
| ASHRAE 52.1 | (1992) Gravimetric and Dust-Spot Procedures for Testing Air-Cleaning Devices Used in General Ventilation for Removing Particulate Matter |

AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME)

ASME B40.1	(1991) Gauges - Pressure Indicating Dial Type - Elastic Element
ASME BPV VIII Div 1	(1998) Boiler and Pressure Vessel Code; Section VIII, Pressure Vessels Division 1 - Basic Coverage
ASME BPV IX	(1998) Boiler and Pressure Vessel Code; Section IX, Welding and Brazing Qualifications

MANUFACTURERS STANDARDIZATION SOCIETY OF THE VALVE AND FITTINGS
INDUSTRY (MSS)

MSS SP-58	(1993) Pipe Hangers and Supports - Materials, Design and Manufacture
MSS SP-69	(1996) Pipe Hangers and Supports - Selection and Application

NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION (NEMA)

NEMA MG 1	(1998) Motors and Generators
NEMA MG 2	(1989) Safety Standard for Construction and Guide for Selection, Installation, and Use of Electric Motors and Generators

UNDERWRITERS LABORATORIES (UL)

UL 207	(1993; Rev thru Oct 1997) Refrigerant-Containing Components and Accessories, Nonelectrical
UL 900	(1994; Rev thru Apr 1997) Test Performance of Air Filter Units
UL 1995	(1995; Rev thru Jul 98) Heating and Cooling Equipment

1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-02 Shop Drawings

Drawings; G, ED

Drawings shall provide adequate detail to demonstrate compliance with contract requirements. Drawings shall consist of:

(1) Equipment layouts which identify assembly and installation details.

- (2) Piping layouts which identify valves and fittings.
- (3) Plans and elevations which identify clearances required for maintenance and operation.
- (4) Wiring diagrams which identify each component individually and interconnected or interlocked relationships between components.
- (5) Foundation drawings, bolt-setting information, and foundation bolts prior to concrete foundation construction for equipment indicated or required to have concrete foundations.
- (6) Details, if piping and equipment are to be supported other than as indicated, which include loadings and type of frames, brackets, stanchions, or other supports.
- (7) Automatic temperature control diagrams and control sequences.
- (8) Installation details which includes the amount of factory set superheat and corresponding refrigerant pressure/temperature.

SD-03 Product Data**Framed Instructions;**

Framed instructions for posting, at least 2 weeks prior to construction completion.

Qualifications;

A letter listing the qualifying procedures for each welder. The letter shall include supporting data such as test procedures used, what was tested etc., and a list of the names of qualified welders and their identification symbols.

Verification of Dimensions;

A letter, at least 2 weeks prior to beginning construction, including the date the site was visited, conformation of existing conditions, and any discrepancies found.

Tests;

A letter, at least 10 working days in advance of each tests, advising the Contracting Officer of the test. Individual letters shall be submitted for the condenser water system, refrigerant system, ductwork leak tests, cooling tower tests, condenser water quality tests, and the system performance tests. Each letter shall identify the date, time, and location for each test.

Demonstrations; G, RE;

A letter, at least 14 working days prior to the date of the proposed training course, which identifies the date, time, and location for the training.

Air-Conditioning; Spare Parts Data.

1.2.1 Air-Conditioning

Manufacturer's standard catalog data, prior to the purchase or installation of a particular component, shall be highlighted to show brand name, model number, size, options, performance charts and curves, etc. in sufficient detail to demonstrate compliance with contract requirements. Data shall be submitted for each specified component. Data shall include manufacturer's recommended installation instructions and procedures. If vibration isolation is specified for a unit, vibration isolator literature shall be included containing catalog cuts and certification that the isolation characteristics of the isolators provided meet the manufacturer's recommendations.

1.2.2 Spare Parts Data

Spare parts data for each different item of equipment specified, after approval of detail drawings and not later than 2 months prior to the date of beneficial occupancy. The data shall include a complete list of parts and supplies, with current unit prices and source of supply, a recommended spare parts list for 1 year of operation, and a list of the parts recommended by the manufacturer to be replaced on a routine basis.

SD-06 Test Reports

Tests

Six copies of each test containing the information described below in bound 216 x 279 mm (8-1/2 x 11 inch) booklets. Individual reports shall be submitted for the condenser water system, refrigerant system, ductwork leak tests, and the cooling tower tests.

- (1) The date the tests were performed.
- (2) A list of equipment used, with calibration certifications.
- (3) Initial test summaries.
- (4) Repairs/adjustments performed.
- (5) Final test results.

System Performance Test; G-RE

Six copies of the report shall be provided in bound 216 x 279 mm (8-1/2 x 11 inch) booklets. The report shall document compliance with the specified performance criteria upon completion and testing of the system. The report shall indicate the number of days covered by the tests and any conclusions as to the adequacy of the system. The report shall also include the following information and shall be taken at least three different times at outside dry-bulb temperatures that are at least 3 degrees C apart:

- (1) Date and outside weather conditions.
- (2) The load on the system based on the following:
 - (a) The refrigerant used in the system.
 - (b) Condensing temperature and pressure.
 - (c) Suction temperature and pressure.

- (d) Ambient, condensing and coolant temperatures.
 - (e) Running current, voltage and proper phase sequence for each phase of all motors.
- (3) The actual on-site setting of operating and safety controls.
 - (4) Thermostatic expansion valve superheat - value as determined by field test
 - (5) Subcooling
 - (6) High and low refrigerant temperature switch set-points
 - (7) Low oil pressure switch set-point
 - (8) Defrost system timer and thermostat set-points
 - (9) Moisture content
 - (10) Capacity control set-points
 - (11) Field data and adjustments which affect unit performance and energy consumption.
 - (12) Field adjustments and settings which were not permanently marked as an integral part of a device.

Inspections

Test report, at the completion of one year of service, in bound 216 x 279 mm (8-1/2 x 11 inch) booklets. The report shall identify the condition of the cooling tower and condenser. The report shall also include a comparison of the condition of the cooling tower and condenser with the manufacturer's recommended operating conditions.

SD-07 Certificates

Air-Conditioning System Service Organizations

1.2.3 Certificates

Air-Conditioning System: Where the system, components, or equipment are specified to comply with requirements of ARI, ASHRAE, ASME, or UL, proof of such compliance shall be provided. The label or listing of the specified agency shall be acceptable evidence. In lieu of the label or listing, a written certificate from an approved, nationally recognized testing organization equipped to perform such services, stating that the items have been tested and conform to the requirements and testing methods of the specified agency may be submitted. When performance requirements of this project's drawings and specifications vary from standard ARI rating conditions, computer printouts, catalog, or other application data certified by ARI or a nationally recognized laboratory as described above shall be included. If ARI does not have a current certification program that encompasses such application data, the manufacturer may self certify that his application data complies with project performance requirements in accordance with the specified test standards.

Service Organizations: A certified list of qualified permanent service

organizations for support of the equipment which includes their addresses and qualifications. The service organizations shall be reasonably convenient to the equipment installation and be able to render satisfactory service to the equipment on a regular and emergency basis during the warranty period of the contract.

SD-10 Operation and Maintenance Data

Operation

Six complete copies of an operation manual in bound 216 x 279 mm (8-1/2 x 11 inch) booklets listing step-by-step procedures required for system startup, operation, and shutdown. The booklets shall include the manufacturer's name, model number, and parts list. The manuals shall include the manufacturer's name, model number, service manual, and a brief description of all equipment and their basic operating features.

Maintenance Manuals

Six complete copies of maintenance manual in bound 216 x 279 mm (8-1/2 x 11 inch) booklets listing routine maintenance procedures, possible breakdowns and repairs, and a trouble shooting guide. The manuals shall include piping and equipment layouts and simplified wiring and control diagrams of the system as installed.

1.3 DELIVERY, STORAGE, AND HANDLING

Stored items shall be protected from the weather and contamination. Proper protection and care of all material before, during, and after installation shall be the Contractor's responsibility. Any materials found to be damaged shall be replaced at the Contractor's expense. During installation, piping and similar openings shall be capped to keep out dirt and other foreign matter.

1.4 PROJECT/SITE CONDITIONS

1.4.1 Verification of Dimensions

The Contractor shall become familiar with all details of the work, verify dimensions in the field, and advise the Contracting Officer of any discrepancy before performing any work.

1.4.2 Drawings

Because of the small scale of the drawings, it is not possible to indicate all offsets, fittings, and accessories that may be required. The Contractor shall carefully investigate the plumbing, fire protection, electrical, structural and finish conditions that would affect the work to be performed and arrange such work accordingly, furnishing required offsets, fittings, and accessories to meet such conditions. Equipment, ductwork, and piping arrangements shall fit into space allotted and allow adequate acceptable clearances for installation, replacement, entry, servicing, and maintenance.

PART 2 PRODUCTS

2.1 STANDARD COMMERCIAL PRODUCTS

Materials and equipment shall be standard products of a manufacturer regularly engaged in the manufacturing of such products, which are of a similar material, design and workmanship. The standard products shall have been in satisfactory commercial or industrial use for 2 years prior to bid opening. The 2 year use shall include applications of equipment and materials under similar circumstances and of similar size. The 2 years experience shall be satisfactorily completed by a product which has been sold or is offered for sale on the commercial market through advertisements, manufacturer's catalogs, or brochures. Products having less than a 2 year field service record shall be acceptable if a certified record of satisfactory field operation, for not less than 6000 hours exclusive of the manufacturer's factory tests, can be shown. Products shall be supported by a service organization. System components shall be environmentally suitable for the indicated locations.

2.2 NAMEPLATES

Major equipment including compressors, condensers, receivers, heat exchanges, fans, cooling towers, pumps and motors shall have the manufacturer's name, address, type or style, model or serial number, and catalog number on a plate secured to the item of equipment. Plates shall be durable and legible throughout equipment life and made of stainless steel. Plates shall be fixed in prominent locations with nonferrous screws or bolts.

2.3 ELECTRICAL WORK

Electrical equipment, motors, motor efficiencies, and wiring shall be in accordance with Section 16415 ELECTRICAL WORK, INTERIOR. Electrical motor driven equipment specified shall be provided complete with motors, motor starters, and controls. Electrical characteristics shall be as shown, and unless otherwise indicated, all motors of 746 kW (1 hp) and above with open, dripproof, totally enclosed, or explosion proof fan cooled enclosures, shall be high efficiency type. Field wiring shall be in accordance with manufacturer's instructions. Each motor shall conform to NEMA MG 1 and NEMA MG 2 and be of sufficient size to drive the equipment at the specified capacity without exceeding the nameplate rating of the motor.

Motors shall be continuous duty with the enclosure specified. Motor starters shall be provided complete with thermal overload protection and other appurtenances necessary for the motor control indicated. Motors shall be furnished with a magnetic across-the-line or reduced voltage type starter as required by the manufacturer. Motor duty requirements shall allow for maximum frequency start-stop operation and minimum encountered interval between start and stop. Motors shall be sized for the applicable loads. Motor torque shall be capable of accelerating the connected load within 20 seconds with 80 percent of the rated voltage maintained at motor terminals during one starting period. Motor bearings shall be fitted with grease supply fittings and grease relief to outside of enclosure. Manual or automatic control and protective or signal devices required for the operation specified and any control wiring required for controls and devices specified, but not shown, shall be provided.

2.4 MISCELLANEOUS MATERIALS

2.4.1 Gaskets

Gaskets shall conform to ASTM F 104 - classification for compressed sheet

with nitrile binder and acrylic fibers for maximum 370 degrees C (700 degrees F) service.

2.4.2 Bolts and Nuts

Bolts and nuts, except as required for piping applications, shall be in accordance with ASTM A 307. The bolt head shall be marked to identify the manufacturer and the standard with which the bolt complies in accordance with ASTM A 307.

2.4.3 Pipe Hangers, Inserts, and Supports

Pipe hangers, inserts, and supports shall conform to MSS SP-58 and MSS SP-69.

2.4.4 Escutcheons

Escutcheons shall be chromium-plated iron or chromium-plated brass, either one piece or split pattern, held in place by internal spring tension or set screws.

2.4.5 Pressure and Vacuum Gauge

Gauge shall conform to ASME B40.1, Class 1, 2, or 3, Style X, Type I or III as required, 115 mm (4-1/2 inches) in diameter with phenolic or metal case. Each gauge range shall be selected so that at normal operating pressure, the needle is within the middle-third of the range.

2.4.6 Temperature Gauges

Industrial duty thermometers shall be provided for the required temperature range. Thermometers shall have Celsius scale in 1 degree graduations scale on a white face. The pointer shall be adjustable.

2.4.6.1 Stem Cased-Glass

Stem cased-glass case shall be polished stainless steel or cast aluminum, 229 mm (9 inches) long, with clear acrylic lens, and non-mercury filled glass tube.

2.4.6.2 Bimetallic Dial

Bimetallic dial type case shall be not less than 89 mm (3-1/2 inches), stainless steel, and shall be hermetically sealed with clear acrylic lens. Bimetallic element shall be silicone dampened and unit fitted with external calibrator adjustment. Accuracy shall be one percent of dial range.

2.4.6.3 Liquid-, Solid-, and Vapor-Filled Dial

Liquid-, solid-, and vapor-filled dial type cases shall be not less than 89 mm (3-1/2 inches), stainless steel or cast aluminum with clear acrylic lens. Fill shall be nonmercury, suitable for encountered cross-ambients, and connecting capillary tubing shall be double-braided bronze.

2.4.6.4 Thermal Well

Thermal well shall be identical size, 15 or 20 mm (1/2 or 3/4 inch) NPT connection, brass or stainless steel. Where test wells are indicated, provide captive plug-fitted type 15 mm (1/2 inch) NPT connection suitable for use with either engraved stem or standard separable socket thermometer

or thermostat. Extended neck thermal wells shall be of sufficient length to clear insulation thickness by 25 mm.

2.4.7 Unicellular Plastic Foam

Unicellular plastic foam shall be in accordance with ASTM C 534, Form T, except that D-Factor shall not exceed 0.28 at 24 degrees C (75 degrees F) mean temperature.

2.4.8 Bird Screen

Screen shall be in accordance with ASTM E 437, Type 1, Class 1, 2 by 2 mesh, 0.79 mm (0.031 inch) diameter stainless steel wire.

2.5 UNITARY EQUIPMENT, PACKAGE SYSTEM

Unit shall be an air-cooled factory assembled, indoor packaged unit as indicated. Unit shall be the air-conditioning type conforming to applicable Underwriters Laboratories (UL) standards including UL 1995. Unit shall be rated in accordance with ARI 340/360. Unit shall be provided with equipment as specified in paragraph "System Components". Evaporator or supply fans shall be double-width, double inlet, forward curved, backward inclined, or airfoil blade, centrifugal scroll type. Motors shall have open enclosures. Integral condenser fans shall be manufacturer's standard for the unit specified and may be centrifugal scroll type. Unit shall be provided with a factory operating charge of refrigerant and oil or a holding charge. Unit shipped with a holding charge shall be field charged with refrigerant and oil in accordance with manufacturer's recommendations.

2.5.1 Air-to-Refrigerant Coils

Air-to-refrigerant coils shall have copper or aluminum tubes of 10 mm (3/8 inch) minimum diameter with copper or aluminum fins that are mechanically bonded or soldered to the tubes. Coils shall be protected with a minimum 0.076 mm thick dipped phenolic or vinyl coating. Casing shall be galvanized steel or aluminum. Contact of dissimilar metals shall be avoided. Coils shall be tested in accordance with ASHRAE 15 at the factory and be suitable for the working pressure of the installed system. Each coil shall be dehydrated and sealed after testing and prior to evaluation and charging. Each unit shall be provided with a factory operating charge of refrigerant and oil or a holding charge. Unit shipped with a holding charge shall be field charged. Separate expansion devices shall be provided for each compressor circuit.

2.5.2 Compressor

Compressor shall be direct drive, semi-hermetic or hermetic reciprocating, or scroll type capable of operating at partial load conditions. Compressor shall be capable of continuous operation down to the lowest step of unloading as specified. Compressors of 35 kW (10 tons) and larger shall be provided with capacity reduction devices to produce automatic capacity reduction of at least 50 percent. If standard with the manufacturer, two or more compressors may be used in lieu of a single compressor with unloading capabilities, in which case the compressors shall operate in sequence, and each compressor shall have an independent refrigeration circuit through the condenser and evaporator. Compressors shall start in the unloaded position. Each compressor shall be provided with vibration isolators, crankcase heater, thermal overloads, lubrication pump, high and

low pressure safety cutoffs and protection against short cycling.

2.5.3 Refrigeration Circuit

Refrigerant containing components shall comply with ASHRAE 15 and be factory tested, cleaned, dehydrated, charged, and sealed. Refrigerant charging valves and connections, and pumpdown valves shall be provided for each circuit. Filter-drier shall be provided in each liquid line and be reversible-flow type. Refrigerant flow control devices shall be an adjustable superheat thermostatic expansion valve with external equalizer matched to coil, capillary or thermostatic control, and a pilot solenoid controlled, leak-tight, four-way refrigerant flow reversing valve.

2.5.4 Unit Controls

Unit shall be internally prewired with a 24 volt control circuit powered by an internal transformer. Terminal blocks shall be provided for power wiring and external control wiring. Unit shall have cutoffs for high and low pressure, and low oil pressure for compressors with positive displacement oil pumps, supply fan failure and safety interlocks on all service panels. Head pressure controls shall sustain unit operation with ambient temperature of 20 degrees c. Adjustable-cycle timers shall prevent short-cycling. Multiple compressors shall be staged by means of a time delay. Unit shall be internally protected by fuses or a circuit breaker in accordance with UL 1995. Low cost cooling shall be made possible by means of a control circuit which will modulate dampers to provide 100 percent outside air while locking out compressors.

2.6 EQUIPMENT EFFICIENCY

Unit shall have an efficiency of 9.5 as indicated on the drawings.

2.7 SYSTEM COMPONENTS

2.7.1 Refrigerant and Oil

Refrigerant shall be one of the fluorocarbon gases. Refrigerants shall have number designations and safety classifications in accordance with ASHRAE 34. Refrigerants shall meet the requirements of ARI 700 as a minimum. Refrigerants shall have an Ozone Depletion Potential (ODP) of less than or equal to 0.05. Contractor shall provide and install a complete charge of refrigerant for the installed system as recommended by the manufacturer. Except for factory sealed units, two complete charges of lubricating oil for each compressor crankcase shall be furnished. One charge shall be used during the system performance testing period. Following the satisfactory completion of the performance testing, the oil shall be drained and replaced with a second charge. Lubricating oil shall be of a type and grade recommended by the manufacturer for each compressor. Where color leak indicator dye is incorporated, charge shall be in accordance with manufacturer's recommendation.

2.7.2 Fans

Fan wheel shafts shall be supported by either maintenance-accessible lubricated antifriction block-type bearings, or permanently lubricated ball bearings. Unit fans shall be selected to produce the cfm required at the fan total pressure. Motor starters, if applicable, shall be magnetic across-the-line type with an open enclosure. Thermal overload protection shall be of the manual or automatic-reset type. Fan wheels shall be

constructed of aluminum or galvanized steel. Centrifugal fan wheel housings shall be of galvanized steel, fan casings shall be constructed of aluminum or galvanized steel. Steel elements of fans, except fan shafts, shall be hot-dipped galvanized after fabrication or fabricated of mill galvanized steel. Mill-galvanized steel surfaces and edges damaged or cut during fabrication by forming, punching, drilling, welding, or cutting shall be recoated with an approved zinc-rich compound. Fan wheels shall be statically and dynamically balanced. Forward curved fan wheels shall be limited to .5 inches. Direct-drive fan motors shall be of the multiple-speed variety. Belt-driven fans shall have adjustable sheaves to provide not less than 10 percent fan-speed adjustment. The sheave size shall be selected so that the fan speed at the approximate midpoint of the sheave adjustment will produce the specified air quantity. Centrifugal scroll-type fans shall be provided with streamlined orifice inlet and V-belt drive. Each drive will be independent of any other drive. V-belt driven fans shall be mounted on a corrosion protected drive shaft supported by either maintenance-accessible lubricated antifriction block-type bearings, or permanently lubricated ball bearings. Each drive will be independent of any other drive. Drive bearings shall be protected with water slingers or shields. V-belt drives shall be fitted with guards where exposed to contact by personnel and adjustable pitch sheaves.

2.7.3 Air Filters

Air filters shall be listed in accordance with requirements of UL 900.

2.7.3.1 Replaceable Media Filters

Replaceable media filters shall be the dry-media type, of the size required to suit the application. Filtering media shall be not less than 50 mm (2 inches) thick fibrous glass media pad supported by a structural wire grid or woven wire mesh. Pad shall be enclosed in a holding frame of not less than 1.6 mm (16 gauge) galvanized steel, and equipped with quick-opening mechanism for changing filter media. The air flow capacity of the filter shall be based on net filter face velocity not exceeding 1.52 m/s (300 feet per minute), with initial resistance of 32 Pa (0.13 inches water gauge). Average efficiency shall be not less than 30 percent when tested in accordance with ASHRAE 52.1.

2.7.4 Coil Frost Protection

Each circuit shall be provided with a coil frost protection system which is a manufacturer's standard. The coil frost protection system shall use a temperature sensor in the suction line of the compressor to shut the compressor off when coil frosting occurs. Timers shall be used to prevent the compressor from rapid cycling.

2.7.5 Pressure Vessels

Pressure vessels shall conform to ASME BPV VIII Div 1 or UL 207, as applicable for maximum and minimum pressure or temperature encountered. Where referenced publications do not apply, pressure components shall be tested at 1-1/2 times design working pressure. Refrigerant wetted carbon steel surfaces shall be pickled or abrasive blasted free of mill scale, cleaned, dried, charged, and sealed.

2.7.5.1 Hot Gas Muffler

Unit shall be selected by the manufacturer for maximum noise attenuation.

Units rated for 100 kW (30 tons) capacity and under may be field tunable type.

2.7.5.2 Liquid Receiver

A liquid receiver shall be provided when a system's condenser or compressor does not contain a refrigerant storage capacity of at least 20 percent in excess of a fully charged system. Receiver shall be designed, filled, and rated in accordance with the recommendations of ARI 495, except as modified herein. Receiver shall be fitted to include an inlet connection; an outlet drop pipe with oil seal and oil drain where necessary; two bull's-eye liquid level sight glass in same vertical plane, 90 degrees apart and perpendicular to axis of receiver or external gauge glass with metal guard and automatic stop valves; thermal well for thermostat; and purge, charge, equalizing, pressurizing, plugged drain and service valves on the inlet and outlet connections. Receiver shall be provided with a relief valve of capacity and setting in accordance with ASHRAE 15.

2.7.5.3 Oil Reservoir

Reservoir capacity shall equal one charge of all connected compressors. Reservoir shall be provided with an external liquid gauge glass, plugged drain, and isolation valves. Vent piping between the reservoir and the suction header shall be provided with a 35 kPa (5 psi) pressure differential relief valve. Reservoir shall be provided with the manufacturer's standard filter on the oil return line to the oil level regulators.

2.7.6 Cabinet Construction

Casings for the specified unitary equipment shall be constructed of galvanized steel or aluminum sheet metal and galvanized or aluminum structural members. Minimum thickness of single wall exterior surfaces shall be 1.3 mm (18 gauge) galvanized steel or 1.8 mm (.071 inch) thick aluminum on units with a capacity above 70 kW (20 tons) and 1.0 mm (20 gauge) galvanized steel or 1.6 mm (0.064 inch) thick aluminum on units with a capacity less than 70 kW (20 tons). Casing shall be fitted with lifting provisions, access panels or doors, fan vibration isolators, electrical control panel, corrosion-resistant components, structural support members, insulated condensate drip pan and drain, and internal insulation in the cold section of the casing. Where double-wall insulated construction is proposed, minimum exterior galvanized sheet metal thickness shall be 1.0 mm (20 gauge). Provisions to permit replacement of major unit components shall be incorporated. Penetrations of cabinet surfaces, including the floor, shall be sealed. Unit shall be fitted with a drain pan which extends under all areas where water may accumulate. Drain pan shall be fabricated from Type 300 stainless steel, galvanized steel with protective coating as required, or an approved plastic material. Pan insulation shall be water impervious. Extent and effectiveness of the insulation of unit air containment surfaces shall prevent, within limits of the specified insulation, heat transfer between the unit exterior and ambient air, heat transfer between the two conditioned air streams, and condensation on surfaces. Insulation shall conform to ASTM C 1071. Paint and finishes shall comply with the requirements specified in paragraph "Factory Coating".

2.7.6.1 Indoor Cabinet

Indoor cabinets shall be suitable for the specified indoor service and

enclose all unit components.

2.8 REFRIGERANT SIGNS

refrigerant signs shall be a medium-weight aluminum type with a baked enamel finish. Signs shall be suitable for indoor or outdoor service. Signs shall have a white background with red letters not less than 12 mm in height.

2.8.1 Installation Identification

Each new refrigeration system shall be provided with a refrigerant sign which indicates the following as a minimum:

- a. Contractor's name
- b. Refrigerant number and amount of refrigerant.
- c. The lubricant identity and amount.
- d. Field test pressure applied.

2.9 INSULATION

2.9.1 Field Installed Insulation

Field installed insulation shall be as specified in Section 15080 THERMAL INSULATION FOR MECHANICAL SYSTEMS.

2.9.2 Factory Installed Insulation

Factory applied insulation shall be as specified for the equipment to be insulated except that refrigerant suction lines shall be insulated with unicellular plastic foam. Insulation shall comply with the fire hazard rating specified in Section 15080 THERMAL INSULATION FOR MECHANICAL SYSTEMS.

2.10 TEMPERATURE CONTROLS

Temperature controls shall be in accordance with Section 15951 DIRECT DIGITAL CONTROL FOR HVAC.

2.11 DRAIN AND MISCELLANEOUS PIPING

Piping, fittings, valves and accessories for drain and miscellaneous services shall be in accordance with Section 15400 PLUMBING, GENERAL PURPOSE.

2.12 FACTORY COATINGS

Unless otherwise specified, equipment and component items, when fabricated from ferrous metal, shall be factory finished with the manufacturer's standard finish.

PART 3 EXECUTION

3.1 INSTALLATION

Work shall be performed in accordance with the manufacturer's published diagrams, recommendations, and equipment warranty requirements. Where

equipment is specified to conform to the requirements of ASME BPV VIII Div 1 and ASME BPV IX, the design, fabrication, and installation of the system shall conform to ASME BPV VIII Div 1 and ASME BPV IX.

3.1.1 Equipment

Refrigeration equipment and the installation thereof shall conform to ASHRAE 15. Necessary supports shall be provided for all equipment, appurtenances. Compressors shall be isolated from the building structure. If mechanical vibration isolators are not provided, vibration absorbing foundations shall be provided. Each foundation shall include isolation units consisting of machine and floor or foundation fastenings, together with intermediate isolation material. Other floor-mounted equipment shall be set on not less than a 150 mm concrete pad doweled in place. Isolators shall be selected and sized based on load-bearing requirements and the lowest frequency of vibration to be isolated. Foundation drawings, bolt-setting information, and foundation bolts shall be furnished prior to concrete foundation construction for all equipment indicated or required to have concrete foundations. Concrete for foundations shall be as specified in Section 03300 CAST-IN-PLACE STRUCTURAL CONCRETE. Equipment shall be properly leveled, aligned, and secured in place in accordance with manufacturer's instructions.

3.1.2 Mechanical Room Ventilation

Mechanical ventilation systems shall be in accordance with Section 15895 AIR SUPPLY, DISTRIBUTION, VENTILATION, AND EXHAUST SYSTEM.

3.1.3 Framed Instructions

Framed instructions shall be framed under glass or laminated plastic and be posted where directed. Instructions shall include equipment layout, wiring and control diagrams, piping, valves and control sequences, and typed condensed operation instructions. The condensed operation instructions shall include preventative maintenance procedures, methods of checking the system for normal and safe operation, and procedures for safely starting and stopping the system. The instructions shall be posted before acceptance testing of the system.

3.2 TESTS

Tests shall be conducted in the presence of the Contracting Officer. Utilities for testing shall be provided as specified in the SPECIAL CONTRACT REQUIREMENTS. Water and electricity required for the tests will be furnished by the Government. Any material, equipment, instruments, and personnel required for the test shall be provided by the Contractor. The services of a qualified technician shall be provided as required to perform all tests and procedures indicated herein. Field tests shall be coordinated with Section 15990 TESTING, ADJUSTING, AND BALANCING OF HVAC SYSTEMS.

3.3 CLEANING AND ADJUSTING

3.3.1 Equipment

Equipment shall be wiped clean, with all traces of oil, dust, dirt, or paint spots removed. System shall be maintained in this clean condition until final acceptance. Bearings shall be lubricated with oil or grease as recommended by the manufacturer. Belts shall be tightened to proper

tension. Control valves and other miscellaneous equipment requiring adjustment shall be adjusted to setting indicated or directed.

3.3.2 Testing, Adjusting, and Balancing

Testing, adjusting, and balancing shall be as specified in Section 15990 TESTING, ADJUSTING AND BALANCING OF HVAC SYSTEMS.

3.4 DEMONSTRATIONS

Contractor shall conduct a training course for the operating staff as designated by the Contracting Officer. The training period shall consist of a total 8 hours of normal working time and start after the system is functionally completed but prior to final acceptance tests. The field instructions shall cover all of the items contained in the approved operation and maintenance manuals as well as demonstrations of routine maintenance operations.

-- End of Section --